

Name: _____ Class: _____ Date: _____

Chapter 2**Multiple Choice***Identify the choice that best completes the statement or answers the question.*

____ 1. Solve for x : $-\frac{35}{3}x - ax = 7\left(-\frac{5}{3}x - 1\right) + b$

A) $x = \frac{7-a}{b}$

B) $x = \frac{b-7}{a}$

C) $x = \frac{7-b}{a}$

D) $x = \frac{a-b}{7}$

E) $x = \frac{b-a}{7}$

____ 2. Solve for x , rounding your answer to the nearest thousandth.

$$2.657 - 1.397(4.193x - 0.27) = 5.968x - 3$$

A) 0.003

B) 0.510

C) 0.061

D) -54.668

E) 6.525

____ 3. Solve the following equation.

$$\frac{x+4}{5} = \frac{x-3}{9}$$

A) $x = -\frac{7}{4}$

B) $x = -\frac{39}{14}$

C) $x = -\frac{19}{4}$

D) $x = -\frac{51}{4}$

E) $x = \frac{3}{2}$

_____ 4. Determine any point(s) of intersection between the following equations.

$$y = 3 - x$$

$$y = \frac{6}{5} - \frac{9}{5}x$$

A) $\left(-\frac{9}{14}, \frac{3}{2}\right)$

B) $\left(\frac{3}{4}, \frac{9}{4}\right)$

C) $\left(-\frac{9}{4}, \frac{21}{4}\right)$

D) $\left(\frac{15}{4}, -\frac{3}{4}\right)$

E) $\left(\frac{3}{2}, \frac{21}{5}\right)$

_____ 5. Simplify $(-4 + i)(-9 + 5i)$ and write the answer in standard form.

A) $-11 - 29i$

B) $31 - 49i$

C) $-41 - 29i$

D) $-41 + 41i$

E) $31 - 29i$

_____ 6. Simplify $\frac{4 + 5i}{6i}$ and write the answer in standard form.

A) $-\frac{5}{6} - \frac{2i}{3}$

B) $\frac{5}{6} - \frac{2i}{3}$

C) $\frac{5}{6} + \frac{2i}{3}$

D) $\frac{2}{3} + \frac{5i}{6}$

E) $-\frac{2}{3} + \frac{5i}{6}$

_____ 7. Solve $9 + 4x^2 - 12x = 0$ by factoring.

A) $x = \frac{3}{2}$

B) $x = 2, -3$

C) $x = \frac{3}{2}, -\frac{3}{2}$

D) $x = 3, -2$

E) $x = \frac{2}{3}, -\frac{2}{3}$

8. Find two quadratic equations having the following solutions.

$$3 + 2\sqrt{6}, 3 - 2\sqrt{6}$$

- A) $x^2 - 6x + 24 = 0$; $2x^2 - 12x + 48 = 0$
B) $x^2 - 15 = 0$; $2x^2 - 30 = 0$
C) $x^2 - 6x - 15 = 0$; $2x^2 - 12x - 30 = 0$
D) $x^2 + 12x - 15 = 0$; $2x^2 + 24x - 30 = 0$
E) $x^2 - 6x + 12 = 0$; $2x^2 - 12x + 24 = 0$

9. Find all solutions of the following equation algebraically.

$$6\left(\frac{r}{r-1}\right)^2 - 7\left(\frac{r}{r-1}\right) - 5 = 0$$

- A) $r = \frac{5}{3}, -\frac{1}{2}$
B) $r = 3, -1$
C) $r = -\frac{1}{2}, -\frac{5}{3}$
D) $r = \frac{5}{2}, \frac{1}{3}$
E) $r = 5, 2$

10. Find all solutions of $\sqrt{x} - \sqrt{x-13} = 1$.

- A) $x = 7$
B) $x = \sqrt{7}$
C) $x = 14$
D) $x = 49$
E) $x = -7$

11. Find all solutions of the following equation algebraically.

$$4m^{2/3} + 20m^{1/3} + 25 = 0$$

- A) $m = -\frac{5}{2}$
B) $m = \frac{25}{4}$
C) $m = -\frac{125}{8}$
D) $m = -\frac{25}{4}$
E) $m = \frac{5}{2}$

_____ 12. Find all solutions of the following equation algebraically.

$$(x+8)^{2/3} = 4$$

- A) $x = \sqrt[3]{4} - 8$
- B) $x = -4$
- C) $x = \sqrt[3]{4} - 64$
- D) $x = \frac{1}{8}$
- E) $x = 0$

_____ 13. Find all solutions of $(x^2 + 7)^{3/2} = 64$.

- A) $x = \pm 3$
- B) $x = \sqrt[3]{7}$
- C) $x = -3$
- D) $x = 4$
- E) $x = \pm \sqrt[3]{7}$

_____ 14. Find the x -intercepts of the graph of the equation $y = 2x + \sqrt{9 - 35x}$

- A) $(9, 0)$
- B) $(-9, 0), \left(\frac{1}{4}, 0\right)$
- C) $(-9, 0)$
- D) $(10, 0), \left(\frac{1}{5}, 0\right)$
- E) $(10, 0), \left(\frac{1}{3}, 0\right)$

_____ 15. Set $y = 0$ and solve the resulting equation.

$$y = 2\sqrt{x} - \frac{20}{\sqrt{x}} - 6$$

- A) $y = -2, 25$
- B) $y = 10$
- C) $y = -2, 10$
- D) $y = 25$
- E) $y = 3$

_____ 16. Find all solutions of the following equation.

$$|x - 5| = x^2 - 5x$$

- A) $x = 0, 1$
- B) $x = 0, 5$
- C) $x = -1, 5$
- D) $x = -1, 0$
- E) $x = -1$

_____ 17. Find all solutions of the following equation.

$$x - 8 = |x^2 - 8x|$$

- A) $x = 1, 8$
- B) $x = -8, 8$
- C) $x = -8, 0$
- D) $x = 8$
- E) $x = 0, 1$

_____ 18. Given the following equation, set $y = 0$ and solve the resulting equation.

$$y = x + \frac{1}{x+2} + 4$$

- A) $x = -4$
- B) $x = -4, 4$
- C) $x = -3, 3$
- D) $x = -3$
- E) $x = 4$

_____ 19. Find the x -intercepts of the graph of the equation $y = |-7x + 2| - 3$.

- A) $\left(\frac{1}{7}, 0\right), \left(-\frac{5}{7}, 0\right)$
- B) $\left(-\frac{1}{7}, 0\right), \left(-\frac{5}{7}, 0\right)$
- C) $\left(-\frac{1}{7}, 0\right), \left(\frac{1}{7}, 0\right)$
- D) $\left(-\frac{5}{7}, 0\right), \left(\frac{5}{7}, 0\right)$
- E) $\left(-\frac{1}{7}, 0\right), \left(\frac{5}{7}, 0\right)$

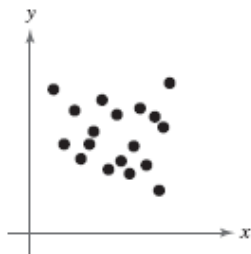
_____ 20. Find an equation that has $x = i, -i, -5$, and 4 as solutions.

- A) $x^4 + x^3 - 19x^2 + x - 20 = 0$
- B) $x^4 + x^3 - 21x^2 + x - 20 = 0$
- C) $x^4 + 9x^3 - 19x^2 + x - 20 = 0$
- D) $x^4 + 9x^3 - 21x^2 + x - 20 = 0$
- E) $x^4 + x^3 - 19x^2 + 9x - 20 = 0$

21. Use absolute value notation to define the interval shown below.

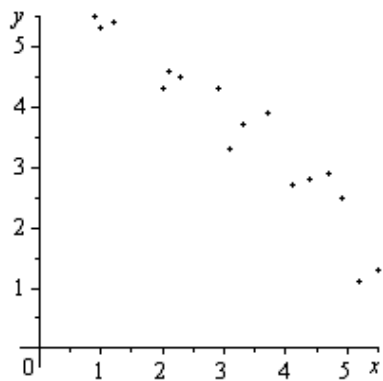


- A) $|x + 3| < 0$
B) $|x| > -3$
C) $|3 - x| > 0$
D) $|x| < 3$
E) $|x - 3| > 0$
22. Determine the intervals on which the following polynomial is entirely negative and those on which it is entirely positive.
 $-x^2 - 2x + 3$
- A) entirely negative: $(-\infty, 2)$; entirely positive: $(2, \infty)$
B) entirely negative: $(-\infty, -3)$, $(1, 2)$; entirely positive: $(-3, 2)$
C) entirely negative: $(-\infty, -3)$, $(1, \infty)$; entirely positive: $(-3, 1)$
D) entirely negative: $(-3, 2)$; entirely positive: $(-\infty, -3)$, $(1, 2)$
E) entirely negative: $(-\infty, 0)$; entirely positive: $(0, \infty)$
23. Solve: $x^2 - 5x - 14 < 0$
- A) $(-\infty, -5)$
B) $(-2, \infty)$
C) $(-2, 7)$
D) $(-\infty, 7)$
E) $(7, \infty)$
24. Determine whether there is positive correlation, negative correlation, or no discernible correlation between the variables shown in the scatter plot below.



- A) positive correlation
B) negative correlation
C) no discernible correlation

25. The scatter plots of different data are shown below. Determine whether there is a positive correlation, negative correlation, or no discernible correlation between the variables.



- A) negative correlation
- B) no discernible correlation
- C) positive correlation

Chapter 2

Answer Section

MULTIPLE CHOICE

- | | |
|------------|--------|
| 1. ANS: C | PTS: 1 |
| 2. ANS: B | PTS: 1 |
| 3. ANS: D | PTS: 1 |
| 4. ANS: C | PTS: 1 |
| 5. ANS: E | PTS: 1 |
| 6. ANS: B | PTS: 1 |
| 7. ANS: A | PTS: 1 |
| 8. ANS: C | PTS: 1 |
| 9. ANS: D | PTS: 1 |
| 10. ANS: D | PTS: 1 |
| 11. ANS: C | PTS: 1 |
| 12. ANS: E | PTS: 1 |
| 13. ANS: A | PTS: 1 |
| 14. ANS: C | PTS: 1 |
| 15. ANS: D | PTS: 1 |
| 16. ANS: C | PTS: 1 |
| 17. ANS: D | PTS: 1 |
| 18. ANS: D | PTS: 1 |
| 19. ANS: E | PTS: 1 |
| 20. ANS: A | PTS: 1 |
| 21. ANS: D | PTS: 1 |
| 22. ANS: C | PTS: 1 |
| 23. ANS: C | PTS: 1 |
| 24. ANS: C | PTS: 1 |
| 25. ANS: A | PTS: 1 |

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Chapter 2

Multiple Choice

Identify the choice that best completes the statement or answers the question.

_____ 1. Solve for x : $\frac{16}{3}x - ax = 8\left(\frac{2}{3}x - 1\right) + b$

A) $x = \frac{b-8}{a}$

B) $x = \frac{a-b}{8}$

C) $x = \frac{8-a}{b}$

D) $x = \frac{8-b}{a}$

E) $x = \frac{b-a}{8}$

_____ 2. Solve for x , rounding your answer to the nearest thousandth.

$$2.657 - 1.397(4.193x - 0.27) = 5.968x - 3$$

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$$y = \frac{6}{5} - \frac{9}{5}x$$

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_____ 7. Solve $9 + 4x^2 - 12x = 0$ by factoring.

A) $x = \frac{3}{2}$

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C) $x = \frac{3}{2}, -\frac{3}{2}$

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- _____ 8. Find two quadratic equations having the following solutions.

$$3 + 2\sqrt{6}, 3 - 2\sqrt{6}$$

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B) $x^2 - 15 = 0$; $2x^2 - 30 = 0$
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_____ 14. Find the x -intercepts of the graph of the equation $y = 2x + \sqrt{9 - 35x}$

- A) $(9, 0)$
- B) $(-9, 0), \left(\frac{1}{4}, 0\right)$
- C) $(-9, 0)$
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- E) $(10, 0), \left(\frac{1}{3}, 0\right)$

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$$y = 2\sqrt{x} - \frac{20}{\sqrt{x}} - 6$$

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$$|x - 5| = x^2 - 5x$$

- A) $x = 0, 1$
- B) $x = 0, 5$
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- D) $x = -1, 0$
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$$x - 8 = |x^2 - 8x|$$

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- A) $\left(\frac{1}{7}, 0\right), \left(-\frac{5}{7}, 0\right)$
- B) $\left(-\frac{1}{7}, 0\right), \left(-\frac{5}{7}, 0\right)$
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- E) $\left(-\frac{1}{7}, 0\right), \left(\frac{5}{7}, 0\right)$

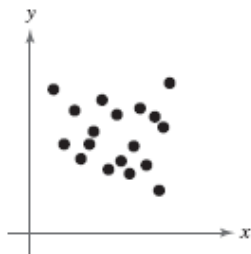
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- C) $x^4 + 9x^3 - 19x^2 + x - 20 = 0$
- D) $x^4 + 9x^3 - 21x^2 + x - 20 = 0$
- E) $x^4 + x^3 - 19x^2 + 9x - 20 = 0$

21. Use absolute value notation to define the interval shown below.

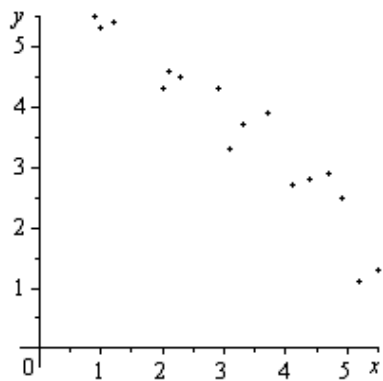


- A) $|x + 3| < 0$
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C) $|3 - x| > 0$
D) $|x| < 3$
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B) entirely negative: $(-\infty, -3)$, $(1, 2)$; entirely positive: $(-3, 2)$
C) entirely negative: $(-\infty, -3)$, $(1, \infty)$; entirely positive: $(-3, 1)$
D) entirely negative: $(-3, 2)$; entirely positive: $(-\infty, -3)$, $(1, 2)$
E) entirely negative: $(-\infty, 0)$; entirely positive: $(0, \infty)$
23. Solve: $x^2 - 5x - 14 < 0$
- A) $(-\infty, -5)$
B) $(-2, \infty)$
C) $(-2, 7)$
D) $(-\infty, 7)$
E) $(7, \infty)$
24. Determine whether there is positive correlation, negative correlation, or no discernible correlation between the variables shown in the scatter plot below.



- A) positive correlation
B) negative correlation
C) no discernible correlation

25. The scatter plots of different data are shown below. Determine whether there is a positive correlation, negative correlation, or no discernible correlation between the variables.



- A) negative correlation
- B) no discernible correlation
- C) positive correlation

Chapter 2

Answer Section

MULTIPLE CHOICE

1. ANS: D	PTS: 1	DIF: Medium	REF: 41-56
2. ANS: B	PTS: 1	DIF: Medium	REF: 21-34
3. ANS: D	PTS: 1	DIF: Medium	REF: 21-34
4. ANS: C	PTS: 1	DIF: Medium	REF: 57-64
5. ANS: E	PTS: 1	DIF: Medium	REF: 25-36
6. ANS: B	PTS: 1	DIF: Medium	REF: 45-52
7. ANS: A	PTS: 1	DIF: Medium	REF: 5-14
8. ANS: C	PTS: 1	DIF: Medium	REF: 67-76
9. ANS: D	PTS: 1	DIF: Medium	REF: 1-14
10. ANS: D	PTS: 1	DIF: Medium	REF: 19-48
11. ANS: C	PTS: 1	DIF: Medium	REF: 19-48
12. ANS: E	PTS: 1	DIF: Medium	REF: 19-48
13. ANS: A	PTS: 1	DIF: Medium	REF: 19-48
14. ANS: C	PTS: 1	DIF: Medium	REF: 49-52
15. ANS: D	PTS: 1	DIF: Medium	REF: 49-52
16. ANS: C	PTS: 1	DIF: Difficult	REF: 53-66
17. ANS: D	PTS: 1	DIF: Difficult	REF: 53-66
18. ANS: D	PTS: 1	DIF: Medium	REF: 67-70
19. ANS: E	PTS: 1	DIF: Medium	REF: 67-70
20. ANS: A	PTS: 1	DIF: Medium	REF: 87-92
21. ANS: D	PTS: 1	DIF: Medium	REF: 39-46
22. ANS: C	PTS: 1	DIF: Medium	REF: 47-52
23. ANS: C	PTS: 1	DIF: Medium	REF: 53-62
24. ANS: C	PTS: 1	DIF: Easy	REF: 3-6
25. ANS: A	PTS: 1	DIF: Easy	REF: 3-6

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Chapter 2

Multiple Choice

Identify the choice that best completes the statement or answers the question.

_____ 1. Solve for x : $\frac{32}{3}x - ax = 8\left(\frac{4}{3}x - 1\right) + b$

A) $x = \frac{b-8}{a}$

B) $x = \frac{8-b}{a}$

C) $x = \frac{b-a}{8}$

D) $x = \frac{a-b}{8}$

E) $x = \frac{8-a}{b}$

_____ 2. Solve for x , rounding your answer to the nearest thousandth.

$$2.761 + 1.765(4.193x - 3.006) = 6.478x - 3$$

A) -0.494

B) -0.033

C) 5.491

D) -0.365

E) 6.009

_____ 3. Solve the following equation.

$$\frac{x+5}{2} = \frac{x-2}{7}$$

A) $x = \frac{31}{9}$

B) $x = -\frac{7}{5}$

C) $x = -\frac{9}{5}$

D) $x = -\frac{39}{5}$

E) $x = -\frac{37}{9}$

_____ 4. Determine any point(s) of intersection between the following equations.

$$y = 5 - x$$

$$y = \frac{4}{3} - \frac{10}{3}x$$

A) $\left(\frac{19}{13}, \frac{46}{3}\right)$

B) $\left(\frac{15}{7}, \frac{20}{7}\right)$

C) $\left(-\frac{11}{13}, \frac{46}{13}\right)$

D) $\left(-\frac{1}{7}, \frac{36}{7}\right)$

E) $\left(-\frac{11}{7}, \frac{46}{7}\right)$

_____ 5. Simplify $(-4 + i)(-9 - 11i)$ and write the answer in standard form.

A) $47 + 95i$

B) $47 + 35i$

C) $53 + 35i$

D) $103 + 25i$

E) $103 + 35i$

_____ 6. Simplify $\frac{-8 - 5i}{7i}$ and write the answer in standard form.

A) $-\frac{5}{7} - \frac{8i}{7}$

B) $-\frac{5}{7} + \frac{8i}{7}$

C) $\frac{5}{7} + \frac{8i}{7}$

D) $\frac{8}{7} - \frac{5i}{7}$

E) $-\frac{8}{7} - \frac{5i}{7}$

_____ 7. Solve $9 + 16x^2 - 24x = 0$ by factoring.

A) $x = \frac{3}{4}$

B) $x = \frac{3}{4}, -\frac{3}{4}$

C) $x = -3, 4$

D) $x = \frac{4}{3}, -\frac{4}{3}$

E) $x = -4, 3$

8. Find two quadratic equations having the following solutions.

$$1 + 2\sqrt{6}, 1 - 2\sqrt{6}$$

- A) $x^2 - 2x + 24 = 0$; $-2x^2 + 4x - 48 = 0$
B) $x^2 - 2x + 12 = 0$; $-2x^2 + 4x - 24 = 0$
C) $x^2 - 2x - 23 = 0$; $-2x^2 + 4x + 46 = 0$
D) $x^2 - 23 = 0$; $-2x^2 + 46 = 0$
E) $x^2 + 12x - 23 = 0$; $-2x^2 - 24x + 46 = 0$

9. Find all solutions of the following equation algebraically.

$$-25\left(\frac{n}{n-1}\right)^2 - 30\left(\frac{n}{n-1}\right) - 9 = 0$$

- A) $n = -5, -3$
B) $n = \frac{3}{8}, \frac{3}{8}$
C) $n = 3, 5$
D) $n = -\frac{3}{8}, -\frac{3}{8}$
E) $n = -\frac{3}{5}, -\frac{3}{5}$

10. Find all solutions of $\sqrt{x} - \sqrt{x-9} = 1$.

- A) $x = -5$
B) $x = 10$
C) $x = 5$
D) $x = \sqrt{5}$
E) $x = 25$

11. Find all solutions of the following equation algebraically.

$$9z^{2/3} + 42z^{1/3} + 49 = 0$$

- A) $z = -\frac{49}{9}$
B) $z = \frac{7}{3}$
C) $z = \frac{49}{9}$
D) $z = -\frac{7}{3}$
E) $z = -\frac{343}{27}$

_____ 12. Find all solutions of the following equation algebraically.

$$(x-3)^{2/3} = 25$$

- A) $x = \sqrt[3]{25} + 3$
- B) $x = 28$
- C) $x = \sqrt[3]{25} - 9$
- D) $x = 128$
- E) $x = \frac{125}{9}$

_____ 13. Find all solutions of $(x^2 + 5)^{3/2} = 27$.

- A) $x = \sqrt[3]{5}$
- B) $x = -2$
- C) $x = 3$
- D) $x = \pm 2$
- E) $x = \pm \sqrt[3]{5}$

_____ 14. Find the x -intercepts of the graph of the equation $y = 5x + \sqrt{6 - 149x}$

- A) $(6, 0)$
- B) $(7, 0), \left(\frac{1}{26}, 0\right)$
- C) $(-6, 0), \left(\frac{1}{25}, 0\right)$
- D) $(7, 0), \left(\frac{1}{24}, 0\right)$
- E) $(-6, 0)$

_____ 15. Set $y = 0$ and solve the resulting equation.

$$y = 3\sqrt{x} - \frac{15}{\sqrt{x}} - 12$$

- A) $y = -1, 25$
- B) $y = 1$
- C) $y = 5$
- D) $y = -1, 5$
- E) $y = 25$

_____ 16. Find all solutions of the following equation.

$$|x - 9| = x^2 - 9x$$

- A) $x = -1, 0$
- B) $x = -1$
- C) $x = 0, 9$
- D) $x = -1, 9$
- E) $x = 0, 1$

_____ 17. Find all solutions of the following equation.

$$x - 4 = |x^2 - 4x|$$

- A) $x = 1, 4$
- B) $x = -4, 0$
- C) $x = 0, 1$
- D) $x = 4$
- E) $x = -4, 4$

_____ 18. Given the following equation, set $y = 0$ and solve the resulting equation.

$$y = x + \frac{1}{x+8} + 10$$

- A) $x = -10, 10$
- B) $x = -9$
- C) $x = -10$
- D) $x = -9, 9$
- E) $x = 10$

_____ 19. Find the x -intercepts of the graph of the equation $y = |-10x - 7| - 6$.

- A) $\left(-\frac{13}{10}, 0\right), \left(\frac{13}{10}, 0\right)$
- B) $\left(\frac{13}{10}, 0\right), \left(\frac{1}{10}, 0\right)$
- C) $\left(-\frac{13}{10}, 0\right), \left(\frac{1}{10}, 0\right)$
- D) $\left(-\frac{13}{10}, 0\right), \left(-\frac{1}{10}, 0\right)$
- E) $\left(\frac{1}{10}, 0\right), \left(-\frac{1}{10}, 0\right)$

_____ 20. Find an equation that has $x = i, -i, 2$, and -5 as solutions.

- A) $x^4 - 7x^3 - 9x^2 + 3x - 10 = 0$
- B) $x^4 + 3x^3 - 11x^2 + 3x - 10 = 0$
- C) $x^4 - 7x^3 - 11x^2 + 3x - 10 = 0$
- D) $x^4 + 3x^3 - 9x^2 + 3x - 10 = 0$
- E) $x^4 + 3x^3 - 9x^2 - 7x - 10 = 0$

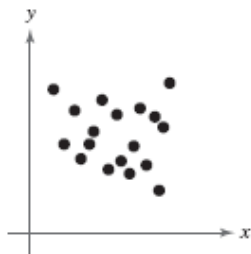
21. Use absolute value notation to define the interval shown below.



- A) $|x + 7| < 0$
B) $|x| < 7$
C) $|x - 7| > 0$
D) $|x| > -7$
E) $|7 - x| > 0$
22. Determine the intervals on which the following polynomial is entirely negative and those on which it is entirely positive.

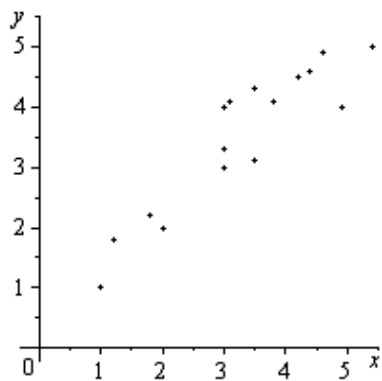
$$-x^2 - 6x + 7$$

- A) entirely negative: $(-7, 4)$; entirely positive: $(-\infty, -7)$, $(1, 4)$
B) entirely negative: $(-\infty, 0)$; entirely positive: $(0, \infty)$
C) entirely negative: $(-\infty, -7)$, $(1, \infty)$; entirely positive: $(-7, 1)$
D) entirely negative: $(-\infty, 4)$; entirely positive: $(4, \infty)$
E) entirely negative: $(-\infty, -7)$, $(1, 4)$; entirely positive: $(-7, 4)$
23. Solve: $x^2 - 2x - 24 < 0$
- A) $(-\infty, 6)$
B) $(-4, 6)$
C) $(-\infty, -2)$
D) $(-4, \infty)$
E) $(6, \infty)$
24. Determine whether there is positive correlation, negative correlation, or no discernible correlation between the variables shown in the scatter plot below.



- A) negative correlation
B) positive correlation
C) no discernible correlation

25. The scatter plots of different data are shown below. Determine whether there is a positive correlation, negative correlation, or no discernible correlation between the variables.



- A) no discernible correlation
- B) negative correlation
- C) positive correlation

Chapter 2

Answer Section

MULTIPLE CHOICE

- | | |
|------------|--------|
| 1. ANS: B | PTS: 1 |
| 2. ANS: A | PTS: 1 |
| 3. ANS: D | PTS: 1 |
| 4. ANS: E | PTS: 1 |
| 5. ANS: B | PTS: 1 |
| 6. ANS: B | PTS: 1 |
| 7. ANS: A | PTS: 1 |
| 8. ANS: C | PTS: 1 |
| 9. ANS: B | PTS: 1 |
| 10. ANS: E | PTS: 1 |
| 11. ANS: E | PTS: 1 |
| 12. ANS: D | PTS: 1 |
| 13. ANS: D | PTS: 1 |
| 14. ANS: E | PTS: 1 |
| 15. ANS: E | PTS: 1 |
| 16. ANS: D | PTS: 1 |
| 17. ANS: D | PTS: 1 |
| 18. ANS: B | PTS: 1 |
| 19. ANS: D | PTS: 1 |
| 20. ANS: D | PTS: 1 |
| 21. ANS: B | PTS: 1 |
| 22. ANS: C | PTS: 1 |
| 23. ANS: B | PTS: 1 |
| 24. ANS: C | PTS: 1 |
| 25. ANS: C | PTS: 1 |

Name: _____ Class: _____ Date: _____

Chapter 2

Multiple Choice

Identify the choice that best completes the statement or answers the question.

_____ 1. Solve: $-5(x - 5) = -2(2 - x) - 2$

A) $x = \frac{1}{4}$

B) $x = -\frac{19}{3}$

C) $x = \frac{31}{4}$

D) $x = \frac{31}{7}$

E) $x = -\frac{19}{7}$

_____ 2. Solve: $-\frac{7}{3x+1} - \frac{12x}{3x-1} = -4$

A) $x = \frac{1}{3}$

B) $x = \frac{1}{11}$

C) $x = \frac{3}{19}$

D) $x = -\frac{1}{3}$

E) $x = \frac{11}{3}$

_____ 3. Which of the following is a zero of the given function?

$$f(x) = \frac{x+10}{3} - \frac{x+5}{7} + 6$$

$$x = -\frac{211}{4}, x = \frac{71}{4}, x = \frac{181}{10}, x = -\frac{181}{4}$$

A) $x = \frac{71}{4}$

B) $x = -\frac{181}{4}$

C) $x = \frac{181}{10}$

D) $x = -\frac{211}{4}$

E) none of these

_____ 4. Which of the following is a zero of the given function?

$$f(x) = x + 4 - \frac{5}{x}$$

$$x = -1, x = -5, x = -6, x = 4$$

- A) $x = -5$
- B) $x = -1$
- C) $x = -6$
- D) $x = 4$
- E) none of these

_____ 5. Solve the following equation.

$$\frac{x+5}{5} = \frac{x-2}{7}$$

- A) $x = -\frac{37}{12}$
- B) $x = -\frac{15}{2}$
- C) $x = -\frac{7}{2}$
- D) $x = \frac{25}{12}$
- E) $x = -\frac{45}{2}$

_____ 6. Solve the following equation.

$$(x+8)^2 + 14(x+14) = (x+8)(x+14)$$

- A) $x = -\frac{10}{7}$
- B) $x = -22$
- C) $x = -\frac{74}{7}$
- D) $x = -\frac{37}{2}$
- E) $x = \frac{61}{2}$

_____ 7. Determine any point(s) of intersection between the following equations.

$$y = 2 - x$$

$$y = \frac{5}{4} - \frac{11}{4}x$$

A) $\left(-\frac{3}{7}, \frac{17}{7}\right)$

B) $\left(\frac{3}{7}, \frac{11}{7}\right)$

C) $\left(\frac{8}{7}, \frac{6}{7}\right)$

D) $\left(\frac{13}{15}, \frac{17}{4}\right)$

E) $\left(-\frac{1}{5}, \frac{17}{15}\right)$

_____ 8. Simplify $(3+i)(4+9i)$ and write the answer in standard form.

A) $23+31i$

B) $33+21i$

C) $33+31i$

D) $3+31i$

E) $3+39i$

_____ 9. Simplify $\frac{3+i}{5+2i}$ and write the answer in standard form.

A) $\frac{17}{29} + \frac{1}{29}i$

B) $\frac{17}{29} - \frac{1}{29}i$

C) $-\frac{17}{29} - \frac{1}{29}i$

D) $-\frac{1}{29} + \frac{17}{29}i$

E) $-\frac{1}{29} - \frac{17}{29}i$

_____ 10. Simplify $\left(\sqrt{-3}\right)^9$ and write the answer in standard form.

A) $-81\sqrt{3}i$

B) The expression cannot be simplified.

C) $81\sqrt{3}$

D) $81\sqrt{3}i$

E) $6561\sqrt{3}i$

_____ 11. Solve $4 + 9x^2 + 12x = 0$ by factoring.

A) $x = -\frac{2}{3}$

B) $x = -\frac{3}{2}, \frac{3}{2}$

C) $x = -\frac{2}{3}, \frac{2}{3}$

D) $x = 2, 3$

E) $x = -3, -2$

_____ 12. Solve the following quadratic equation by factoring.

$$(w+a)^2 - 16b^2 = 0$$

A) $w = a, -16b$

B) $w = a - 4b, a + 4b$

C) $w = -a, 16b$

D) $w = -a + 4b, -a - 4b$

E) $w = -a + 4b, a + 4b$

_____ 13. Solve $0 = 4x^2 + 20x + 20$ using the quadratic formula.

A) $x = \frac{-5 \pm \sqrt{5}}{2}$

B) $x = \frac{5}{2}$

C) $x = \frac{-2 \pm \sqrt{5}}{5}$

D) $x = \frac{5 \pm \sqrt{5}}{2}$

E) $x = \frac{\pm \sqrt{5}}{2}$

_____ 14. Solve the following equation using any convenient method.

$$(x+9)^2 = -100$$

A) $x = -10 \pm 9i$

B) $x = -100, 10$

C) $x = -9 \pm 10i$

D) $x = -100, -9$

E) $x = -9, 10$

_____ 15. Find all solutions of $\frac{1}{x^2} + \frac{8}{x} + 15 = 0$.

- A) $x = -5, 3$
- B) $x = -\frac{1}{8}, \frac{1}{2}$
- C) $x = -5, -3$
- D) $x = -\frac{1}{5}, -\frac{1}{3}$
- E) $x = \frac{1}{8}, -\frac{1}{2}$

_____ 16. Find all solutions of the following equation algebraically.

$$4\sqrt{x-3} - \sqrt{x+7} = 0$$

- A) $x = \frac{2}{3}$
- B) $x = \frac{3}{7}$
- C) $x = \frac{19}{7}$
- D) $x = \frac{11}{3}$
- E) $x = \frac{19}{3}$

_____ 17. Find all solutions of the following equation algebraically.

$$(x+4)^{2/3} = 4$$

- A) $x = \frac{1}{2}$
- B) $x = 4$
- C) $x = 0$
- D) $x = \sqrt[3]{4} - 16$
- E) $x = \sqrt[3]{4} - 4$

_____ 18. Find the x -intercepts of the graph of the equation $y = 7x + \sqrt{8 - 391x}$

- A) $(8, 0)$
- B) $(-8, 0), \left(\frac{1}{49}, 0\right)$
- C) $(9, 0), \left(\frac{1}{48}, 0\right)$
- D) $(9, 0), \left(\frac{1}{50}, 0\right)$
- E) $(-8, 0)$

_____ 19. Set $y = 0$ and solve the resulting equation.

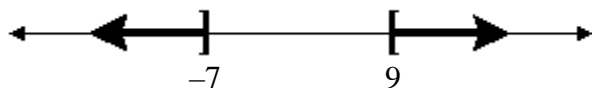
$$y = 2\sqrt{x} - \frac{20}{\sqrt{x}} - 6$$

- A) $y = 3$
- B) $y = -2, 10$
- C) $y = -2, 25$
- D) $y = 25$
- E) $y = 10$

_____ 20. Solve: $5(x - 2) > 5x - 5$

- A) $x < -2$
- B) no solution
- C) $-5 < x < 2$
- D) $x > 5$
- E) $x \leq -8$

_____ 21. Use absolute value notation to define the interval shown below.



- A) $8 - |x + 1| \leq 0$
- B) $|x + 1| - 8 \geq 0$
- C) $|x - 1| - 8 \geq 0$
- D) $-7 \leq x \leq 9$
- E) $|-1 - x| \geq 8$

_____ 22. Solve the inequality $16x - x^3 < 0$ and write the solution set in interval notation.

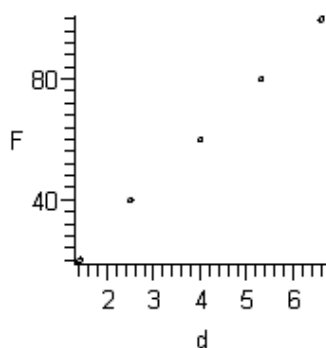
- A) $(-4, 4)$
- B) $(-\infty, -4) \cup (0, 4)$
- C) $(-\infty, 4)$
- D) $(-4, 0) \cup (4, \infty)$
- E) $(-\infty, \infty)$

23. Hooke's Law states that the force F required to compress or stretch a spring (within its elastic limits) is proportional to the distance d that the spring is compressed or stretched from its original length. That is, $F = kd$ where k is the measure of the stiffness of the spring and is called the *spring constant*. The table below shows the elongation d in centimeters of a spring when a force of F kilograms is applied.

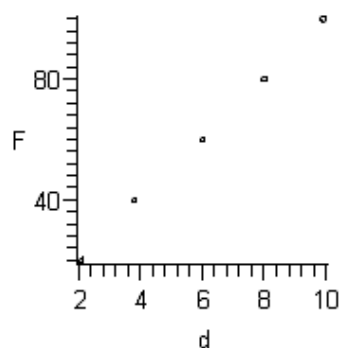
Force, F	Elongation, d
20	2.1
40	3.8
60	6.0
80	8.0
100	9.9

Sketch a scatter plot of the data.

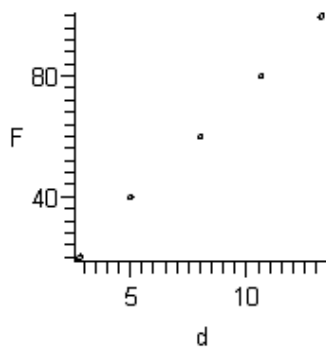
A)



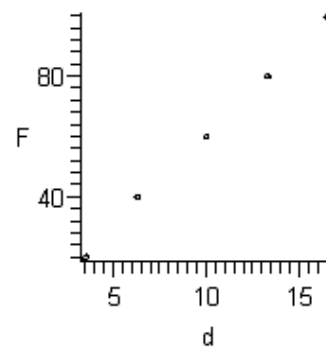
D)



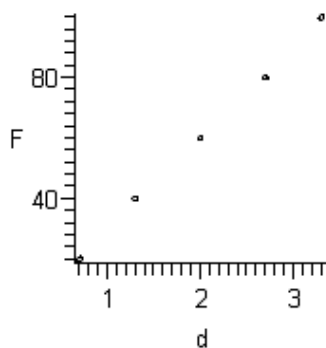
B)



E)



C)




24. Hooke's Law states that the force F required to compress or stretch a spring (within its elastic limits) is proportional to the distance d that the spring is compressed or stretched from its original length. That is, $F = kd$ where k is the measure of the stiffness of the spring and is called the *spring constant*. The table below shows the elongation d in centimeters of a spring when a force of F kilograms is applied.

Force, F	Elongation, d
20	2.8
40	5.0
60	8.0
80	10.6
100	13.2

Find the equation of the line that seems to best fit the data. Use the model to estimate the elongation of the spring when a force of 30 kilograms is applied. Round your answer to one decimal place.

- A) 6.0 centimeters
- B) 4.0 centimeters
- C) 8.0 centimeters
- D) 3.0 centimeters
- E) 2.0 centimeters

25. The average lengths L of cellular phone calls in minutes from 1999 to 2004 are shown in the table below.



Year	Average length, L (in minutes)
1999	2.38
2000	2.56
2001	2.74
2002	2.73
2003	2.87
2004	3.05

Use the *regression* feature of a graphing utility to find a linear model for the data. Let t represent the year, with $t = 9$ corresponding to 1999. Use the model to predict the average lengths of cellular phone calls for the year 2010. Round your answer to two decimal places.

- A) 7.52 minutes
- B) 2.76 minutes
- C) 4.76 minutes
- D) 1.88 minutes
- E) 3.76 minutes

Chapter 2

Answer Section

MULTIPLE CHOICE

- | | |
|------------|--------|
| 1. ANS: D | PTS: 1 |
| 2. ANS: B | PTS: 1 |
| 3. ANS: B | PTS: 1 |
| 4. ANS: A | PTS: 1 |
| 5. ANS: E | PTS: 1 |
| 6. ANS: D | PTS: 1 |
| 7. ANS: A | PTS: 1 |
| 8. ANS: D | PTS: 1 |
| 9. ANS: B | PTS: 1 |
| 10. ANS: D | PTS: 1 |
| 11. ANS: A | PTS: 1 |
| 12. ANS: D | PTS: 1 |
| 13. ANS: A | PTS: 1 |
| 14. ANS: C | PTS: 1 |
| 15. ANS: D | PTS: 1 |
| 16. ANS: D | PTS: 1 |
| 17. ANS: B | PTS: 1 |
| 18. ANS: E | PTS: 1 |
| 19. ANS: D | PTS: 1 |
| 20. ANS: B | PTS: 1 |
| 21. ANS: C | PTS: 1 |
| 22. ANS: D | PTS: 1 |
| 23. ANS: D | PTS: 1 |
| 24. ANS: B | PTS: 1 |
| 25. ANS: E | PTS: 1 |

Name: _____ Class: _____ Date: _____

Chapter 2

Multiple Choice

Identify the choice that best completes the statement or answers the question.

_____ 1. Solve: $-7(x - 7) = -3(2 - x) - 2$

A) $x = \frac{57}{10}$

B) $x = \frac{19}{2}$

C) $x = -\frac{41}{4}$

D) $x = \frac{1}{6}$

E) $x = -\frac{41}{10}$

_____ 2. Solve: $\frac{2}{3x+1} - \frac{24x}{3x-1} = -8$

A) $x = -\frac{5}{9}$

B) $x = -\frac{5}{11}$

C) $x = \frac{1}{3}$

D) $x = -\frac{3}{5}$

E) $x = -\frac{1}{3}$

_____ 3. Which of the following is a zero of the given function?

$$f(x) = \frac{x+4}{3} - \frac{x-5}{5} + 4$$

$$x = -\frac{65}{2}, x = \frac{25}{2}, x = \frac{95}{8}, x = -\frac{95}{2}$$

A) $x = -\frac{65}{2}$

B) $x = -\frac{95}{2}$

C) $x = \frac{25}{2}$

D) $x = \frac{95}{8}$

E) none of these

_____ 4. Which of the following is a zero of the given function?

$$f(x) = x - 4 - \frac{12}{x}$$

$$x = -6, x = -2, x = -8, x = -4$$

- A) $x = -6$
- B) $x = -2$
- C) $x = -4$
- D) $x = -8$
- E) none of these

_____ 5. Solve the following equation.

$$\frac{x+6}{5} = \frac{x-7}{9}$$

- A) $x = -\frac{61}{14}$
- B) $x = \frac{19}{14}$
- C) $x = -\frac{41}{4}$
- D) $x = -\frac{89}{4}$
- E) $x = -\frac{13}{4}$

_____ 6. Solve the following equation.

$$(x+16)^2 + 18(x+18) = (x+16)(x+18)$$

- A) $x = \frac{89}{4}$
- B) $x = -\frac{73}{4}$
- C) $x = \frac{110}{9}$
- D) $x = -\frac{146}{9}$
- E) $x = -34$

_____ 7. Determine any point(s) of intersection between the following equations.

$$y = 5 - x$$

$$y = \frac{4}{3} - \frac{10}{3}x$$

A) $\left(-\frac{11}{7}, \frac{46}{7}\right)$

B) $\left(\frac{15}{7}, \frac{20}{7}\right)$

C) $\left(-\frac{11}{13}, \frac{46}{13}\right)$

D) $\left(\frac{19}{13}, \frac{46}{3}\right)$

E) $\left(-\frac{1}{7}, \frac{36}{7}\right)$

_____ 8. Simplify $(-4 + i)(-7 - 8i)$ and write the answer in standard form.

A) $60 + 20i$

B) $36 + 52i$

C) $39 + 25i$

D) $36 + 25i$

E) $60 + 25i$

_____ 9. Simplify $\frac{7 + 3i}{5 + 6i}$ and write the answer in standard form.

A) $-\frac{27}{61} + \frac{53}{61}i$

B) $-\frac{53}{61} - \frac{27}{61}i$

C) $\frac{53}{61} - \frac{27}{61}i$

D) $\frac{53}{61} + \frac{27}{61}i$

E) $-\frac{27}{61} - \frac{53}{61}i$

_____ 10. Simplify $\left(\sqrt{-3}\right)^7$ and write the answer in standard form.

A) $-27\sqrt{3}$

B) The expression cannot be simplified.

C) $27\sqrt{3}i$

D) $-27\sqrt{3}i$

E) $729\sqrt{3}i$

_____ 11. Solve $4 + 9x^2 + 12x = 0$ by factoring.

A) $x = -3, -2$

B) $x = -\frac{2}{3}$

C) $x = 2, 3$

D) $x = -\frac{2}{3}, \frac{2}{3}$

E) $x = -\frac{3}{2}, \frac{3}{2}$

_____ 12. Solve the following quadratic equation by factoring.

$$(v+a)^2 - 25b^2 = 0$$

A) $v = -a + 5b, a + 5b$

B) $v = a - 5b, a + 5b$

C) $v = a, -25b$

D) $v = -a + 5b, -a - 5b$

E) $v = -a, 25b$

_____ 13. Solve $0 = 64x^2 + 80x + 20$ using the quadratic formula.

A) $x = \frac{-5 \pm \sqrt{5}}{8}$

B) $x = \frac{5}{8}$

C) $x = \frac{-8 \pm \sqrt{5}}{5}$

D) $x = \frac{5 \pm \sqrt{5}}{8}$

E) $x = \frac{\pm \sqrt{5}}{8}$

_____ 14. Solve the following equation using any convenient method.

$$(x-8)^2 = -81$$

A) $x = -81, 8$

B) $x = 8, 9$

C) $x = -9 \pm 8i$

D) $x = 8 \pm 9i$

E) $x = -81, 9$

_____ 15. Find all solutions of $\frac{1}{x^2} + \frac{8}{x} + 15 = 0$.

A) $x = -\frac{1}{8}, \frac{1}{2}$

B) $x = -5, -3$

C) $x = \frac{1}{8}, -\frac{1}{2}$

D) $x = -\frac{1}{5}, -\frac{1}{3}$

E) $x = -5, 3$

_____ 16. Find all solutions of the following equation algebraically.

$$4\sqrt{x-10} - \sqrt{x+6} = 0$$

A) $x = \frac{46}{3}$

B) $x = \frac{23}{7}$

C) $x = \frac{16}{15}$

D) $x = \frac{1}{7}$

E) $x = \frac{166}{15}$

_____ 17. Find all solutions of the following equation algebraically.

$$(x-6)^{2/3} = 9$$

A) $x = \sqrt[3]{9} - 36$

B) $x = 33$

C) $x = 15$

D) $x = \sqrt[3]{9} + 6$

E) $x = \frac{3}{4}$

_____ 18. Find the x -intercepts of the graph of the equation $y = 2x + \sqrt{4-15x}$

A) $(-4, 0)$

B) $(-4, 0), \left(\frac{1}{4}, 0\right)$

C) $(4, 0)$

D) $(5, 0), \left(\frac{1}{5}, 0\right)$

E) $(5, 0), \left(\frac{1}{3}, 0\right)$

_____ 19. Set $y = 0$ and solve the resulting equation.

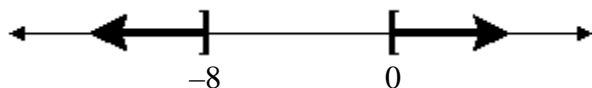
$$y = 2\sqrt{x} - \frac{6}{\sqrt{x}} - 4$$

- A) $y = 9$
- B) $y = 3$
- C) $y = 1$
- D) $y = -1, 9$
- E) $y = -1, 3$

_____ 20. Solve: $7(x - 6) > 7x - 35$

- A) no solution
- B) $x < -6$
- C) $x \leq -36$
- D) $x > 7$
- E) $-7 < x < 6$

_____ 21. Use absolute value notation to define the interval shown below.



- A) $|x - 4| - 4 \geq 0$
- B) $|4 - x| \geq 4$
- C) $4 - |x - 4| \leq 0$
- D) $-8 \leq x \leq 0$
- E) $|x + 4| - 4 \geq 0$

_____ 22. Solve the inequality $16x - x^3 < 0$ and write the solution set in interval notation.

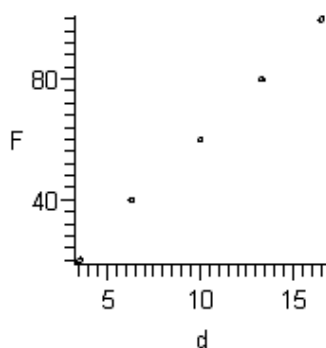
- A) $(-\infty, 4)$
- B) $(-\infty, -4) \cup (0, 4)$
- C) $(-4, 0) \cup (4, \infty)$
- D) $(-\infty, \infty)$
- E) $(-4, 4)$

23. Hooke's Law states that the force F required to compress or stretch a spring (within its elastic limits) is proportional to the distance d that the spring is compressed or stretched from its original length. That is, $F = kd$ where k is the measure of the stiffness of the spring and is called the *spring constant*. The table below shows the elongation d in centimeters of a spring when a force of F kilograms is applied.

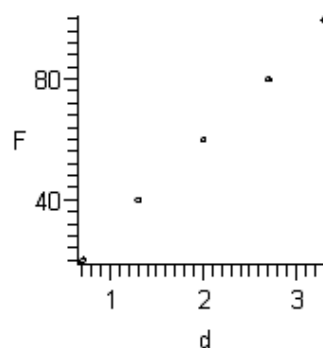
Force, F	Elongation, d
20	1.4
40	2.5
60	4.0
80	5.3
100	6.6

Sketch a scatter plot of the data.

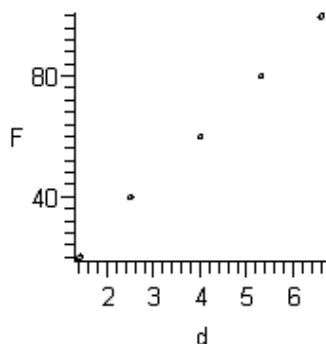
A)



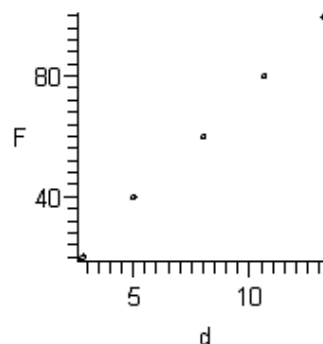
D)



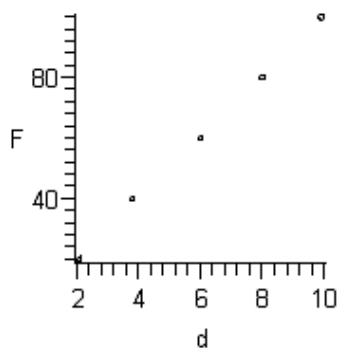
B)



E)



C)




24. Hooke's Law states that the force F required to compress or stretch a spring (within its elastic limits) is proportional to the distance d that the spring is compressed or stretched from its original length. That is, $F = kd$ where k is the measure of the stiffness of the spring and is called the *spring constant*. The table below shows the elongation d in centimeters of a spring when a force of F kilograms is applied.

Force, F	Elongation, d
20	3.5
40	6.3
60	10.0
80	13.3
100	16.5

Find the equation of the line that seems to best fit the data. Use the model to estimate the elongation of the spring when a force of 35 kilograms is applied. Round your answer to one decimal place.

- A) 2.9 centimeters
- B) 8.7 centimeters
- C) 4.4 centimeters
- D) 5.8 centimeters
- E) 11.6 centimeters

25. The average lengths L of cellular phone calls in minutes from 1999 to 2004 are shown in the table below.



Year	Average length, L (in minutes)
1999	2.38
2000	2.56
2001	2.74
2002	2.73
2003	2.87
2004	3.05

Use the *regression* feature of a graphing utility to find a linear model for the data. Let t represent the year, with $t = 9$ corresponding to 1999. Use the model to predict the average lengths of cellular phone calls for the year 2006. Round your answer to two decimal places.

- A) 6.54 minutes
- B) 1.64 minutes
- C) 2.27 minutes
- D) 4.27 minutes
- E) 3.27 minutes

Chapter 2

Answer Section

MULTIPLE CHOICE

- | | |
|------------|--------|
| 1. ANS: A | PTS: 1 |
| 2. ANS: A | PTS: 1 |
| 3. ANS: B | PTS: 1 |
| 4. ANS: B | PTS: 1 |
| 5. ANS: D | PTS: 1 |
| 6. ANS: B | PTS: 1 |
| 7. ANS: A | PTS: 1 |
| 8. ANS: D | PTS: 1 |
| 9. ANS: C | PTS: 1 |
| 10. ANS: D | PTS: 1 |
| 11. ANS: B | PTS: 1 |
| 12. ANS: D | PTS: 1 |
| 13. ANS: A | PTS: 1 |
| 14. ANS: D | PTS: 1 |
| 15. ANS: D | PTS: 1 |
| 16. ANS: E | PTS: 1 |
| 17. ANS: B | PTS: 1 |
| 18. ANS: A | PTS: 1 |
| 19. ANS: A | PTS: 1 |
| 20. ANS: A | PTS: 1 |
| 21. ANS: E | PTS: 1 |
| 22. ANS: C | PTS: 1 |
| 23. ANS: B | PTS: 1 |
| 24. ANS: D | PTS: 1 |
| 25. ANS: E | PTS: 1 |

Name: _____ Class: _____ Date: _____

Chapter 2

Multiple Choice

Identify the choice that best completes the statement or answers the question.

_____ 1. Solve: $-9(x - 9) = -5(2 - x) - 2$

A) $x = -\frac{69}{4}$

B) $x = \frac{3}{8}$

C) $x = \frac{93}{14}$

D) $x = -\frac{69}{14}$

E) $x = \frac{93}{8}$

_____ 2. Solve: $\frac{7}{3x+1} - \frac{18x}{3x-1} = -6$

A) $x = -\frac{13}{11}$

B) $x = \frac{13}{3}$

C) $x = \frac{1}{13}$

D) $x = \frac{1}{3}$

E) $x = -\frac{1}{3}$

_____ 3. Which of the following is a zero of the given function?

$$f(x) = \frac{x-3}{2} - \frac{x+4}{6} + 6$$

$$x = -\frac{31}{2}, x = \frac{49}{2}, x = \frac{23}{4}, x = -\frac{23}{2}$$

A) $x = -\frac{31}{2}$

B) $x = -\frac{23}{2}$

C) $x = \frac{23}{4}$

D) $x = \frac{49}{2}$

E) none of these

_____ 4. Which of the following is a zero of the given function?

$$f(x) = x - 5 - \frac{14}{x}$$

$$x = -7, x = -2, x = -9, x = -5$$

- A) $x = -2$
- B) $x = -5$
- C) $x = -7$
- D) $x = -9$
- E) none of these

_____ 5. Solve the following equation.

$$\frac{x+4}{4} = \frac{x-8}{9}$$

- A) $x = \frac{4}{13}$
- B) $x = -\frac{44}{13}$
- C) $x = -\frac{12}{5}$
- D) $x = -\frac{36}{5}$
- E) $x = -\frac{68}{5}$

_____ 6. Solve the following equation.

$$(x+18)^2 - 16(x-16) = (x+18)(x-16)$$

- A) $x = -\frac{434}{9}$
- B) $x = -\frac{178}{9}$
- C) $x = -2$
- D) $x = \frac{55}{4}$
- E) $x = \frac{217}{4}$

_____ 7. Determine any point(s) of intersection between the following equations.

$$y = 3 - x$$

$$y = \frac{6}{5} - \frac{9}{5}x$$

A) $\left(-\frac{9}{14}, \frac{3}{2}\right)$

B) $\left(\frac{15}{4}, -\frac{3}{4}\right)$

C) $\left(\frac{3}{4}, \frac{9}{4}\right)$

D) $\left(\frac{3}{2}, \frac{21}{5}\right)$

E) $\left(-\frac{9}{4}, \frac{21}{4}\right)$

_____ 8. Simplify $(-2+i)(5+9i)$ and write the answer in standard form.

A) $47 - i$

B) $47 - 13i$

C) $-19 + 43i$

D) $-23 - 13i$

E) $-19 - 13i$

_____ 9. Simplify $\frac{3+i}{5+2i}$ and write the answer in standard form.

A) $-\frac{1}{29} - \frac{17}{29}i$

B) $\frac{17}{29} - \frac{1}{29}i$

C) $-\frac{1}{29} + \frac{17}{29}i$

D) $-\frac{17}{29} - \frac{1}{29}i$

E) $\frac{17}{29} + \frac{1}{29}i$

_____ 10. Simplify $\left(\sqrt{-3}\right)^{11}$ and write the answer in standard form.

A) $-243\sqrt{3}$

B) $59,049\sqrt{3}i$

C) $-243\sqrt{3}i$

D) The expression cannot be simplified.

E) $243\sqrt{3}i$

_____ 11. Solve $9 + 16x^2 + 24x = 0$ by factoring.

A) $x = -\frac{3}{4}, \frac{3}{4}$

B) $x = 4, 3$

C) $x = -3, -4$

D) $x = -\frac{4}{3}, \frac{4}{3}$

E) $x = -\frac{3}{4}$

_____ 12. Solve the following quadratic equation by factoring.

$$(p+a)^2 - 36b^2 = 0$$

A) $p = a, -36b$

B) $p = a - 6b, a + 6b$

C) $p = -a, 36b$

D) $p = -a + 6b, -a - 6b$

E) $p = -a + 6b, a + 6b$

_____ 13. Solve $0 = 16x^2 + 40x + 15$ using the quadratic formula.

A) $x = \frac{\pm\sqrt{10}}{4}$

B) $x = \frac{5}{4}$

C) $x = \frac{-5 \pm \sqrt{10}}{4}$

D) $x = \frac{-4 \pm \sqrt{10}}{5}$

E) $x = \frac{5 \pm \sqrt{10}}{4}$

_____ 14. Solve the following equation using any convenient method.

$$(x+2)^2 = -81$$

A) $x = -2 \pm 9i$

B) $x = -2, 9$

C) $x = -81, 9$

D) $x = -81, -2$

E) $x = -9 \pm 2i$

_____ 15. Find all solutions of $\frac{1}{x^2} + \frac{10}{x} + 16 = 0$.

- A) $x = -2, -8$
- B) $x = -2, 8$
- C) $x = -\frac{1}{2}, -\frac{1}{8}$
- D) $x = -\frac{1}{10}, \frac{1}{6}$
- E) $x = \frac{1}{10}, -\frac{1}{6}$

_____ 16. Find all solutions of the following equation algebraically.

$$3\sqrt{x-4} - \sqrt{x-3} = 0$$

- A) $x = -\frac{6}{7}$
- B) $x = \frac{9}{7}$
- C) $x = \frac{33}{8}$
- D) $x = \frac{1}{8}$
- E) $x = \frac{9}{2}$

_____ 17. Find all solutions of the following equation algebraically.

$$(x+3)^{2/3} = 25$$

- A) $x = 22$
- B) $x = \sqrt[3]{25} - 3$
- C) $x = \frac{125}{9}$
- D) $x = 122$
- E) $x = \sqrt[3]{25} - 9$

_____ 18. Find the x -intercepts of the graph of the equation $y = 7x + \sqrt{10 - 489x}$

- A) $(-10, 0)$
- B) $(11, 0), \left(\frac{1}{50}, 0\right)$
- C) $(11, 0), \left(\frac{1}{48}, 0\right)$
- D) $(10, 0)$
- E) $(-10, 0), \left(\frac{1}{49}, 0\right)$

_____ 19. Set $y = 0$ and solve the resulting equation.

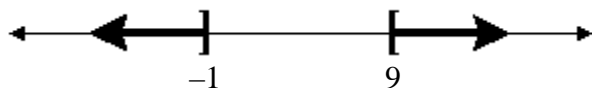
$$y = 2\sqrt{x} - \frac{15}{\sqrt{x}} - 1$$

- A) $y = -3, 9$
- B) $y = 2$
- C) $y = -3, 8$
- D) $y = 8$
- E) $y = 9$

_____ 20. Solve: $3(x - 4) > 3x - 9$

- A) no solution
- B) $x < -4$
- C) $-3 < x < 4$
- D) $x > 3$
- E) $x \leq -8$

_____ 21. Use absolute value notation to define the interval shown below.



- A) $5 - |x + 4| \leq 0$
- B) $|x - 4| - 5 \geq 0$
- C) $|-4 - x| \geq 5$
- D) $|x + 4| - 5 \geq 0$
- E) $-1 \leq x \leq 9$

_____ 22. Solve the inequality $36x - x^3 < 0$ and write the solution set in interval notation.

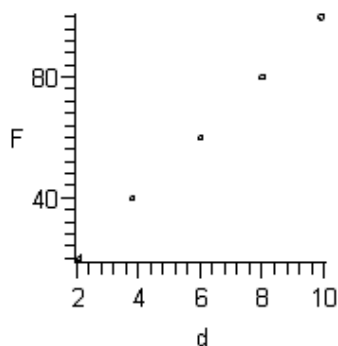
- A) $(-6, 0) \cup (6, \infty)$
- B) $(-6, 6)$
- C) $(-\infty, \infty)$
- D) $(-\infty, -6) \cup (0, 6)$
- E) $(-\infty, 6)$

23. Hooke's Law states that the force F required to compress or stretch a spring (within its elastic limits) is proportional to the distance d that the spring is compressed or stretched from its original length. That is, $F = kd$ where k is the measure of the stiffness of the spring and is called the *spring constant*. The table below shows the elongation d in centimeters of a spring when a force of F kilograms is applied.

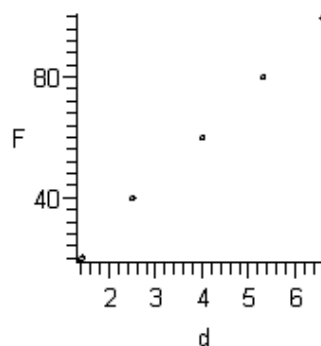
Force, F	Elongation, d
20	3.5
40	6.3
60	10.0
80	13.3
100	16.5

Sketch a scatter plot of the data.

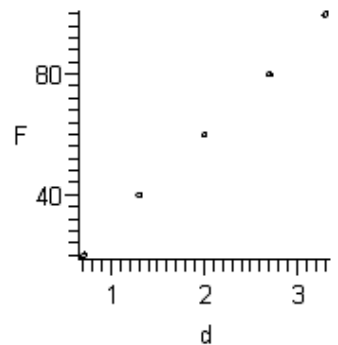
A)



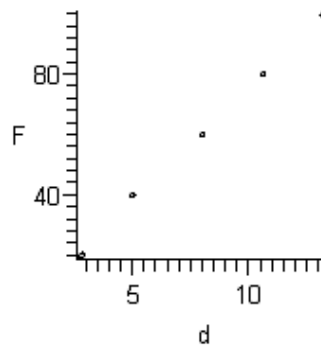
D)



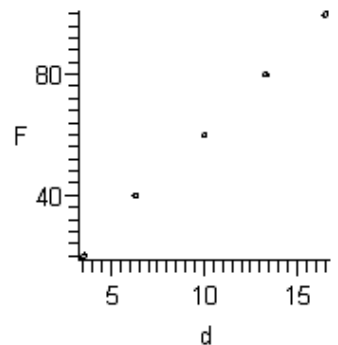
B)



E)



C)




24. Hooke's Law states that the force F required to compress or stretch a spring (within its elastic limits) is proportional to the distance d that the spring is compressed or stretched from its original length. That is, $F = kd$ where k is the measure of the stiffness of the spring and is called the *spring constant*. The table below shows the elongation d in centimeters of a spring when a force of F kilograms is applied.

Force, F	Elongation, d
20	1.4
40	2.5
60	4.0
80	5.3
100	6.6

Find the equation of the line that seems to best fit the data. Use the model to estimate the elongation of the spring when a force of 70 kilograms is applied. Round your answer to one decimal place.

- A) 2.3 centimeters
- B) 4.6 centimeters
- C) 6.9 centimeters
- D) 9.2 centimeters
- E) 3.5 centimeters

25. The average lengths L of cellular phone calls in minutes from 1999 to 2004 are shown in the table below.



Year	Average length, L (in minutes)
1999	2.38
2000	2.56
2001	2.74
2002	2.73
2003	2.87
2004	3.05

Use the *regression* feature of a graphing utility to find a linear model for the data. Let t represent the year, with $t = 9$ corresponding to 1999. Use the model to predict the average lengths of cellular phone calls for the year 2012. Round your answer to two decimal places.

- A) 5.00 minutes
- B) 8.00 minutes
- C) 4.00 minutes
- D) 2.00 minutes
- E) 3.00 minutes

Chapter 2

Answer Section

MULTIPLE CHOICE

- | | |
|------------|--------|
| 1. ANS: C | PTS: 1 |
| 2. ANS: B | PTS: 1 |
| 3. ANS: B | PTS: 1 |
| 4. ANS: A | PTS: 1 |
| 5. ANS: E | PTS: 1 |
| 6. ANS: A | PTS: 1 |
| 7. ANS: E | PTS: 1 |
| 8. ANS: E | PTS: 1 |
| 9. ANS: B | PTS: 1 |
| 10. ANS: C | PTS: 1 |
| 11. ANS: E | PTS: 1 |
| 12. ANS: D | PTS: 1 |
| 13. ANS: C | PTS: 1 |
| 14. ANS: A | PTS: 1 |
| 15. ANS: C | PTS: 1 |
| 16. ANS: C | PTS: 1 |
| 17. ANS: D | PTS: 1 |
| 18. ANS: A | PTS: 1 |
| 19. ANS: E | PTS: 1 |
| 20. ANS: A | PTS: 1 |
| 21. ANS: B | PTS: 1 |
| 22. ANS: A | PTS: 1 |
| 23. ANS: C | PTS: 1 |
| 24. ANS: B | PTS: 1 |
| 25. ANS: C | PTS: 1 |