

Additional Exercises Answers

10.1 Form I

1. $\{\pm 7\}$ 2. $\{\pm 9\}$ 3. $\{\pm \sqrt{11}\}$ 4. $\{\pm 2\sqrt{5}\}$ 5. $\left\{\pm \frac{8}{5}\right\}$ 6. $\{-5, 1\}$ 7. $\{-2, 8\}$ 8. 5 in.
9. $\sqrt{41}$ 10. $3\sqrt{10}$ 11. $3\sqrt{2}$ 12. $4\sqrt{5}$ 13. $\sqrt{197}$ 14. 2006 15. 5 cm

10.1 Form II

1. $\{\pm 6\}$ 2. $\{\pm \sqrt{7}\}$ 3. $\left\{\pm \frac{10\sqrt{7}}{7}\right\}$ 4. $\{-3, 9\}$ 5. $\{-5 \pm 2\sqrt{10}\}$ 6. $\{-10 \pm \sqrt{19}\}$
7. $\{-5 \pm \sqrt{7}\}$ 8. 25 in. 9. $\sqrt{2}$ 10. $\sqrt{10}$ 11. $\sqrt{178}$ 12. $\sqrt{58}$ 13. $\sqrt{34}$ 14. 4 sec
15. $48\sqrt{2}$ cm

10.1 Form III

1. $\{\pm \sqrt{23}\}$ 2. $\{\pm 3\sqrt{3}\}$ 3. $\left\{\pm \frac{\sqrt{35}}{7}\right\}$ 4. $\{-2, 3\}$ 5. $\left\{\frac{-4 \pm \sqrt{10}}{5}\right\}$ 6. $3 \pm \sqrt{6}$
7. $\frac{1}{2} \pm \sqrt{2}$ 8. $4\sqrt{15}$ m 9. $4\sqrt{2}$ 10. $4\sqrt{5}$ 11. 13 12. $2\sqrt{2}$ 13. $2\sqrt{10}$ 14. 8 ft.
15. 11 in.

10.2 Form I

1. $x^2 + 10x + 25 = (x + 5)^2$ 2. $x^2 - 16x + 64 = (x - 8)^2$ 3. $x^2 + 8x + 16 = (x + 4)^2$
4. $x^2 - 4x + 4 = (x - 2)^2$ 5. $x^2 + 12x + 36 = (x + 6)^2$ 6. $x^2 - 22x + 121 = (x - 11)^2$
7. $x^2 + x + \frac{1}{4} = \left(x + \frac{1}{2}\right)^2$ 8. $x^2 - 5x + \frac{25}{4} = \left(x - \frac{5}{2}\right)^2$ 9. $x^2 + 18x + 81 = (x + 9)^2$
10. $x^2 - 7x + \frac{49}{4} = \left(x - \frac{7}{2}\right)^2$ 11. $-3, -9$ 12. $1 \pm \sqrt{5}$ 13. $\left\{\frac{-3 \pm 3\sqrt{5}}{2}\right\}$ 14. $\{5, 7\}$
15. $\{-5, 7\}$ 16. $\{-3 \pm \sqrt{6}\}$ 17. $\left\{\frac{1 \pm \sqrt{29}}{7}\right\}$ 18. $\left\{\frac{5 \pm \sqrt{33}}{2}\right\}$ 19. $\{2 \pm \sqrt{21}\}$ 20. $\left\{\frac{3}{2}, 3\right\}$

10.2 Form II

1. $x^2 - 8x + 16 = (x - 4)^2$ 2. $x^2 + 20x + 100 = (x + 10)^2$ 3. $x^2 - 9x + \frac{81}{4} = \left(x - \frac{9}{2}\right)^2$
4. $x^2 + 3x + \frac{9}{4} = \left(x + \frac{3}{2}\right)^2$ 5. $x^2 - 5x + \frac{25}{4} = \left(x - \frac{5}{2}\right)^2$ 6. $x^2 + 11x + \frac{121}{4} = \left(x + \frac{11}{2}\right)^2$
7. $x^2 - 18x + 81 = (x - 9)^2$ 8. $x^2 + 13x + \frac{169}{4} = \left(x + \frac{13}{2}\right)^2$ 9. $x^2 - \frac{1}{2}x + \frac{1}{16} = \left(x - \frac{1}{4}\right)^2$

10. $x^2 - x + \frac{1}{4} = \left(x - \frac{1}{2}\right)^2$ 11. $\{-6, 2\}$ 12. $\{-6 \pm \sqrt{19}\}$ 13. $\left\{0, \frac{7}{3}\right\}$ 14. $\{-2 \pm \sqrt{7}\}$
 15. $\{2 \pm \sqrt{17}\}$ 16. $\{-4 \pm 2\sqrt{5}\}$ 17. $\{5 \pm \sqrt{29}\}$ 18. $\{-4 \pm \sqrt{21}\}$ 19. $\{-4 \pm \sqrt{19}\}$
 20. $\left\{\frac{1}{2}, -\frac{2}{3}\right\}$

10.2 Form III

1. $x^2 - 3x + \frac{9}{4} = \left(x - \frac{3}{2}\right)^2$ 2. $x^2 + 5x + \frac{25}{4} = \left(x + \frac{5}{2}\right)^2$ 3. $x^2 + 7x + \frac{49}{4} = \left(x + \frac{7}{2}\right)^2$
 4. $x^2 + 9x + \frac{81}{4} = \left(x + \frac{9}{2}\right)^2$ 5. $x^2 - 15x + \frac{225}{4} = \left(x - \frac{15}{2}\right)^2$ 6. $x^2 + \frac{1}{3}x + \frac{1}{36} = \left(x + \frac{1}{6}\right)^2$
 7. $x^2 - \frac{2}{3}x + \frac{1}{9} = \left(x - \frac{1}{3}\right)^2$ 8. $x^2 + \frac{4}{7}x + \frac{16}{196} = \left(x + \frac{4}{14}\right)^2$ 9. $x^2 + \frac{1}{2}x + \frac{1}{16} = \left(x + \frac{1}{4}\right)^2$
 10. $x^2 - \frac{1}{4}x + \frac{1}{64} = \left(x - \frac{1}{8}\right)^2$ 11. $\{-3, 1\}$ 12. $\{-2, 8\}$ 13. $\{2 \pm \sqrt{15}\}$ 14. $\{-5 \pm \sqrt{29}\}$
 15. $\left\{\frac{-3 \pm \sqrt{145}}{4}\right\}$ 16. $\left\{\frac{2 \pm \sqrt{6}}{3}\right\}$ 17. $\left\{\frac{-3 \pm \sqrt{19}}{2}\right\}$ 18. $\{-15, 1\}$ 19. $\left\{-\frac{5}{2}, \frac{2}{3}\right\}$
 20. $\{-2, -1\}$

10.3 Form I

1. $\{-5, 3\}$ 2. $\{2, 7\}$ 3. $\left\{-\frac{2}{3}, \frac{1}{2}\right\}$ 4. $\{3 \pm \sqrt{6}\}$ 5. $\{-1 \pm \sqrt{6}\}$ 6. $\{7 \pm \sqrt{19}\}$
 7. $\left\{-\frac{9}{4}, -\frac{3}{4}\right\}$ 8. $\left\{-\frac{1}{4}, 6\right\}$ 9. $\left\{-\frac{4}{3}, -\frac{5}{6}\right\}$ 10. $\{2 \pm \sqrt{11}\}$ 11. $\{-3, 0\}$ 12. 2003
 13. 1996 14. 2.4 cm, 4.4 cm 15. 5 sec

10.3 Form II

1. $\{-6, 2\}$ 2. $\left\{\frac{-3 \pm \sqrt{7}}{2}\right\}$ 3. $\left\{\frac{-6 \pm \sqrt{33}}{3}\right\}$ 4. $\{-2 \pm \sqrt{13}\}$ 5. $\left\{\frac{-5 \pm \sqrt{21}}{2}\right\}$
 6. $\{4 \pm \sqrt{15}\}$ 7. $\left\{\frac{4 \pm \sqrt{13}}{3}\right\}$ 8. $\{1 \pm \sqrt{5}\}$ 9. $\left\{\frac{3 \pm \sqrt{5}}{2}\right\}$ 10. $\left\{\frac{-3 \pm \sqrt{3}}{2}\right\}$ 11. $\{-5 \pm \sqrt{19}\}$
 12. 2004 13. 2000 14. 35.6 feet 15. 4.6 sec

10.3 Form III

1. $\{-3, -2\}$ 2. $\{0, 5\}$ 3. $\left\{\frac{3 \pm \sqrt{5}}{4}\right\}$ 4. $\{-3 \pm \sqrt{17}\}$ 5. $\{4 \pm \sqrt{2}\}$ 6. $\left\{-\frac{1}{2}, 3\right\}$
 7. $\left\{\frac{-1 \pm \sqrt{113}}{8}\right\}$ 8. $\left\{\frac{-6 \pm \sqrt{26}}{2}\right\}$ 9. $\left\{\frac{-6 \pm \sqrt{6}}{6}\right\}$ 10. $\left\{\frac{-3 \pm \sqrt{7}}{2}\right\}$ 11. $\left\{\frac{-1 \pm \sqrt{17}}{4}\right\}$
 12. 2005 13. 2004 14. 7 cm 15. 5.2 sec

10.4 Form I

1. $3i$ 2. $8i$ 3. $30i$ 4. $2i\sqrt{5}$ 5. $4i\sqrt{5}$ 6. $10i\sqrt{3}$ 7. $8+11i$ 8. $5-2i$ 9. $7+8i$
 10. $-2 \pm 4i$ 11. $-5 \pm 10i$ 12. $6 \pm 8i$ 13. $8 \pm 3i$ 14. $4 \pm i$ 15. $4 \pm 3i$ 16. $-5 \pm 3i$
 17. $-1 \pm 3i$ 18. $1 \pm 2i\sqrt{3}$ 19. $2 \pm 5i$ 20. $-2 \pm i\sqrt{3}$

10.4 Form II

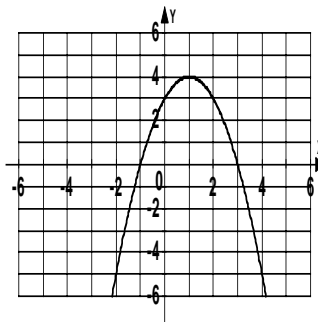
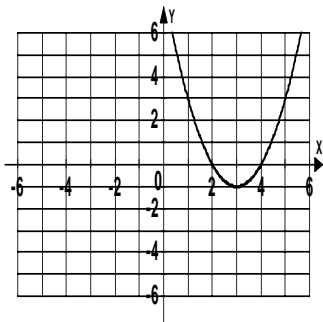
1. $3i\sqrt{5}$ 2. $6i\sqrt{2}$ 3. $2i\sqrt{11}$ 4. $2i\sqrt{30}$ 5. $10i\sqrt{6}$ 6. $6i\sqrt{15}$ 7. $5+2i\sqrt{2}$ 8. $12-i\sqrt{6}$
 9. $11-4i\sqrt{2}$ 10. $15 \pm 2i\sqrt{5}$ 11. $10 \pm i$ 12. $-3 \pm i\sqrt{13}$ 13. $-12 \pm 4i\sqrt{2}$ 14. $11 \pm 5i\sqrt{2}$
 15. $\pm 7i$ 16. $1 \pm i$ 17. $2 \pm i$ 18. $\frac{1 \pm i\sqrt{47}}{6}$ 19. $\frac{1 \pm i\sqrt{11}}{4}$ 20. $2 \pm 7i\sqrt{2}$

10.4 Form III

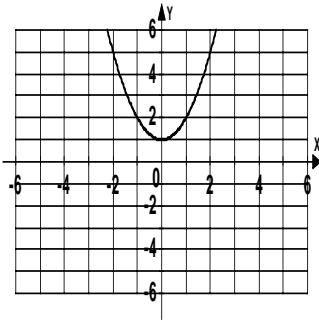
1. $7i\sqrt{2}$ 2. $5i\sqrt{6}$ 3. $2i\sqrt{70}$ 4. $2i\sqrt{33}$ 5. $9i\sqrt{3}$ 6. $3i\sqrt{30}$ 7. $14+2i\sqrt{7}$
 8. $19-5i\sqrt{2}$ 9. $4+7i\sqrt{3}$ 10. $\frac{-3 \pm i\sqrt{6}}{5}$ 11. $\frac{-1 \pm i\sqrt{7}}{2}$ 12. $\frac{2 \pm 2i\sqrt{3}}{3}$ 13. $-5 \pm i\sqrt{11}$
 14. $-12 \pm 8i\sqrt{6}$ 15. $\frac{2 \pm i\sqrt{26}}{3}$ 16. $5 \pm i\sqrt{2}$ 17. $\frac{-1 \pm i\sqrt{31}}{2}$ 18. $\frac{7 \pm i\sqrt{23}}{4}$ 19. $\frac{2 \pm i\sqrt{14}}{3}$
 20. $\frac{-1 \pm i\sqrt{5}}{2}$

10.5 Form I

1. upward 2. downward 3. $(-4.6, 0)$ $(0.6, 0)$ 4. $(8, 0)$ $(9, 0)$ 5. $(4, 0)$ $(-7, 0)$ 6. $(0, 0)$
 7. $(0, 1)$ 8. $(0, -8)$ 9. $(0, 7)$ 10. $(4, -20)$ 11. $(1, 9)$
 12. 13.



14.



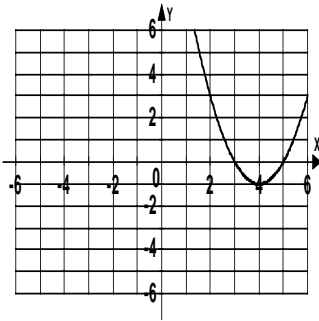
15. 5000 automobiles

10.5 Form II

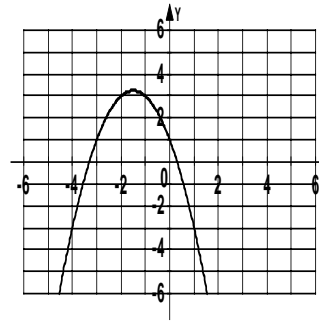
1. downward 2. upward 3. (0, 0) (-18, 0) 4. (3, 0) (-4.5, 0) 5. none 6. (0, 6)

7. $(0, -\frac{3}{4})$ 8. (0, -9) 9. $(\frac{1}{6}, \frac{1}{12})$ 10. (0, 12) 11. $(-\frac{1}{2}, -\frac{3}{4})$

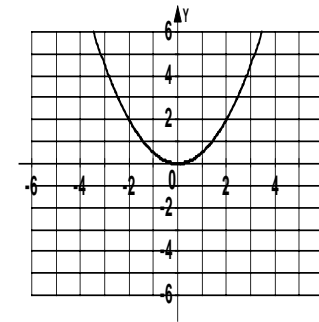
12.



13.



14.



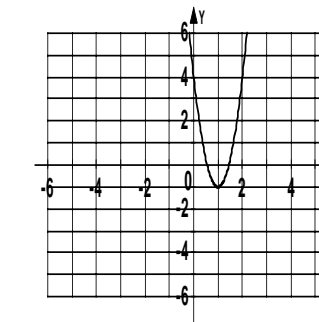
15. 650 ft.

10.5 Form III

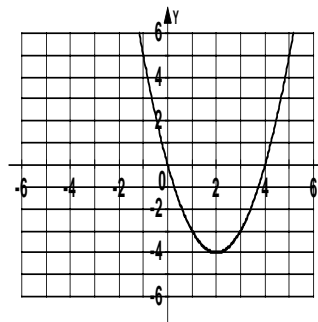
1. upward 2. downward 3. (1.4, 0) (-1.4, 0) 4. (-5.3, 0) (1.3, 0) 5. (4.8, 0) (0.2, 0)

6. (0, 0.15) 7. $(0, \frac{3}{7})$ 8. (0, -24) 9. $(\frac{3}{2}, -\frac{25}{4})$ 10. $(\frac{7}{2}, \frac{77}{4})$ 11. (-1, -1)

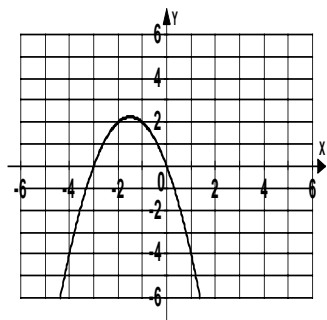
12.



13.



14.



15. 400 pretzels

10.6 Form I

- function
- not a function
- function
- not a function
- Domain: $\{-6, 4, 10\}$ Range: $\{6, -9, 5\}$
- Domain: $\{1, -1, 12\}$ Range: $\{-6, -7, -5\}$
- Domain: $\{3, -1, 2\}$ Range: $\{-1, -6, -3\}$
- Domain: $\{-1, 9, -3\}$ Range: $\{-2, 4, 7\}$
- 6
- 2
- 1
- 6
- 2
- 1
- not a function
- function
- function
- \$16.55
- 511 feet
- 343.2 oz.

10.6 Form II

- function
- not a function
- function
- function
- Domain: $\{1, 0, -5\}$ Range: $\{5, 6, -4\}$
- Domain: $\{-5, 2, 1\}$ Range: $\{3, -8, 0\}$
- Domain: $\{1, 2, 3\}$ Range: $\{1, 2, 3\}$
- Domain: $\{-8, -6, 0\}$ Range: $\{5\}$
- 18
- 10
- 4
- 0
- 1
- 1
- function
- function
- not a function
- \$18.65
- 811 feet
- 181.08 oz.

10.6 Form III

- function
- function
- not a function
- function
- Domain: $\{8, -3, 5\}$ Range: $\{1, 6, 0\}$
- Domain: $\{-4, 7, 8\}$ Range: $\{2, -1, -9\}$
- Domain: $\{5, -2, 6\}$ Range: $\{5, -2, 6\}$
- Domain: $\{9, 5, 0\}$ Range: $\{3, -4, 1\}$
- 26
- 40
- 10
- 10
- 14
- 3
- 1
- 1
- function
- not a function
- not a function
- \$28.10
- 1323 feet
- 222 feet