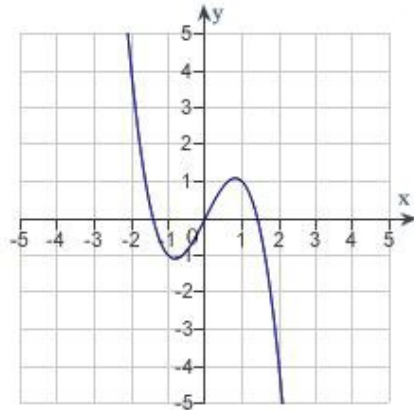


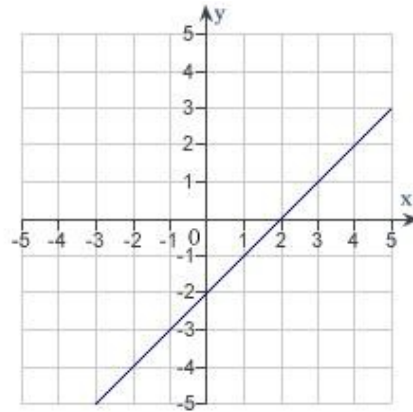
MULTIPLE CHOICE

1. Which of the following is the correct graph of $y = 2 - x$?

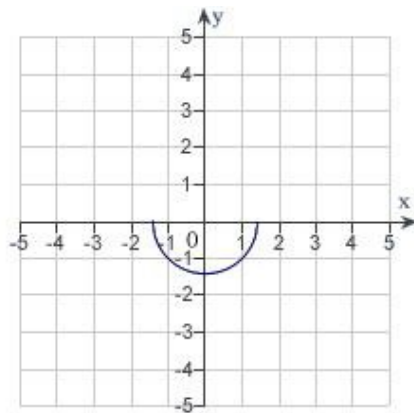
a.



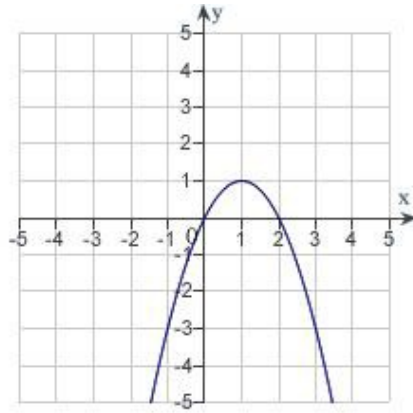
d.



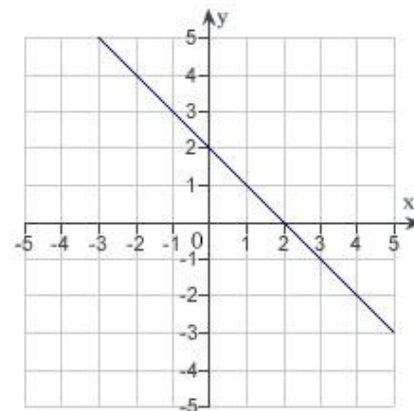
b.



e.



c.



ANS: C

PTS: 1

DIF: Easy

REF: 1.1.1

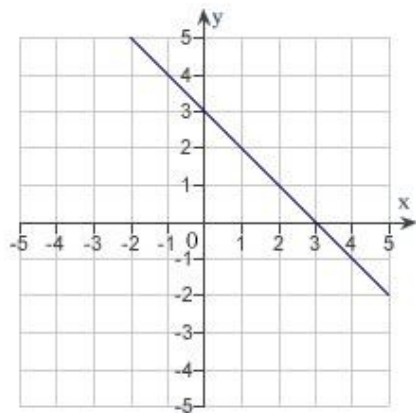
OBJ: Identify the graph of a linear equation

MSC: Skill

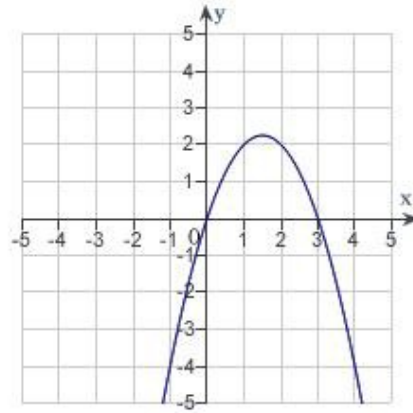
NOT: Section 1.1

2. Which of the following is the correct graph of $y = -\sqrt{3-x^2}$?

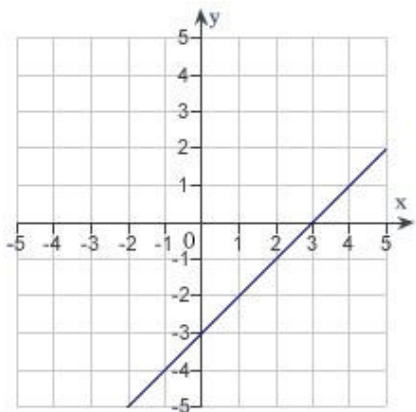
a.



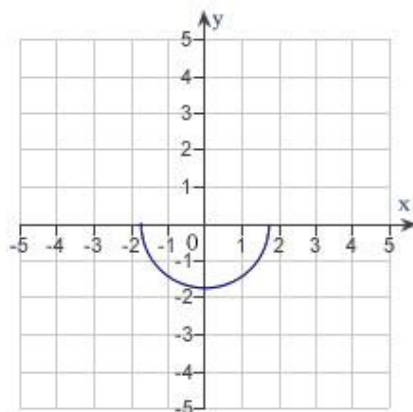
d.



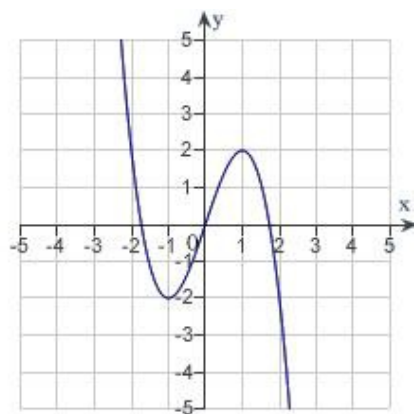
b.



e.



c.



ANS: E

PTS: 1

DIF: Easy

REF: 1.1.2

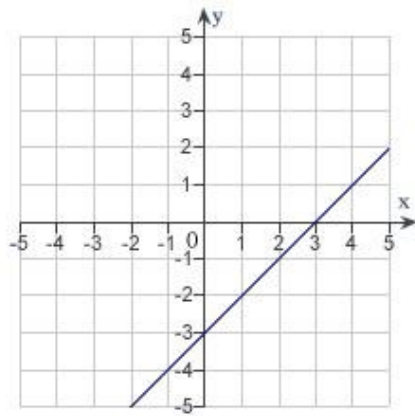
OBJ: Identify the graph of a semicircle

MSC: Skill

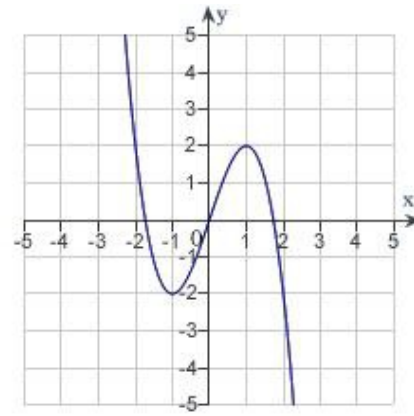
NOT: Section 1.1

3. Which of the following is the correct graph of $y = 3x - x^2$?

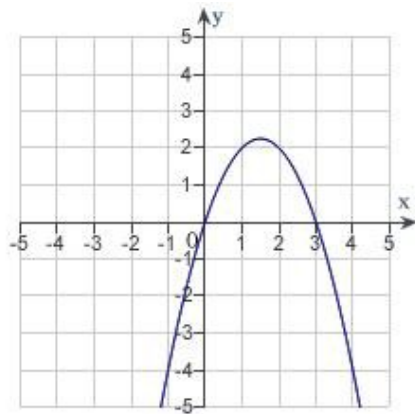
a.



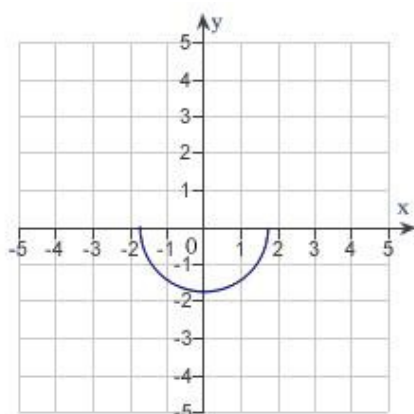
d.



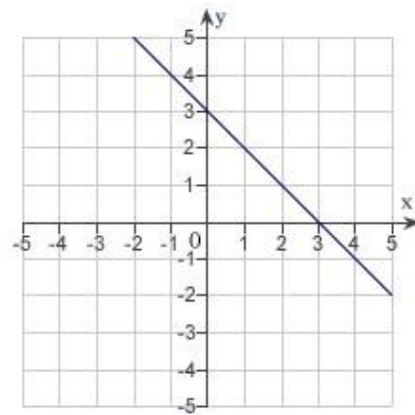
b.



e.



c.



ANS: B

PTS: 1

DIF: Easy

REF: 1.1.3

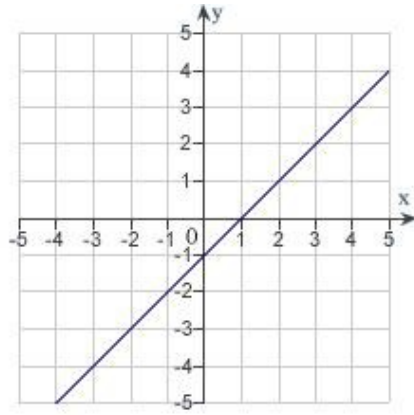
OBJ: Identify the graph of a quadratic equation

MSC: Skill

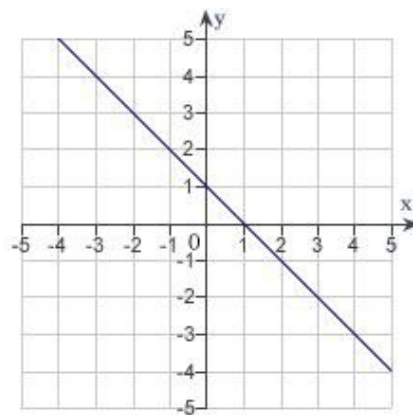
NOT: Section 1.1

4. Which of the following is the correct graph of $y = x - x^3$?

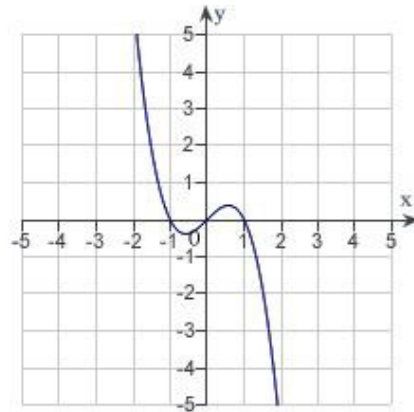
a.



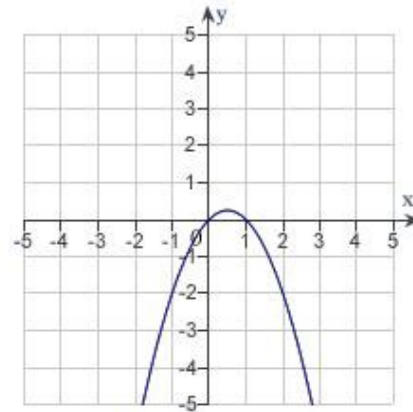
d.



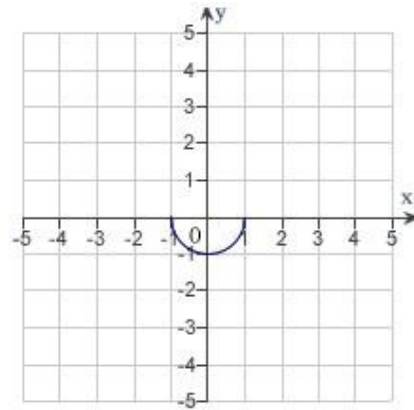
b.



e.



c.



ANS: B

PTS: 1

DIF: Easy

REF: 1.1.4

OBJ: Identify the graph of a cubic equation

MSC: Skill

NOT: Section 1.1

5. Find all intercepts:

$$y = x^2 - x - 12$$

a. x -intercepts: $(4, 0)$, $(-3, 0)$; y -intercepts: $(0, 4)$, $(0, 3)$

b. x -intercept: $(12, 0)$; y -intercepts: $(0, 4)$, $(0, 3)$

- c. x -intercepts: $(4, 0)$, $(-3, 0)$; y -intercept: $(0, -12)$
- d. x -intercepts: $(4, 0)$, $(-3, 0)$; y -intercepts: $(0, -12)$, $(0, 12)$
- e. x -intercept: $(-3, 0)$; y -intercept: $(0, -12)$

ANS: C PTS: 1 DIF: Easy REF: 1.1.21
 OBJ: Calculate the intercepts of an equation MSC: Skill
 NOT: Section 1.1

6. Find all intercepts:

$$y = 64x - x^3$$

- a. x -intercepts: $(-8, 0)$, $(8, 0)$; no y -intercept
- b. x -intercept: $(0, 0)$; y -intercepts: $(0, 0)$, $(0, -8)$, $(0, 8)$
- c. x -intercepts: $(0, 0)$, $(-8, 0)$, $(8, 0)$; y -intercept: $(0, 0)$
- d. x -intercepts: $(0, 0)$, $(-8, 0)$, $(8, 0)$; no y -intercept
- e. x -intercepts: $(-8, 0)$, 8 ; y -intercept: $(0, 0)$

ANS: C PTS: 1 DIF: Easy REF: 1.1.22
 OBJ: Calculate the intercepts of an equation MSC: Skill
 NOT: Section 1.1

7. Find all intercepts:

$$y = (x + 5)\sqrt{4 - x^2}$$

- a. x -intercepts: $(-5, 0)$, $(-2, 0)$, $(2, 0)$; y -intercepts: $(0, 0)$, $(0, 10)$
- b. x -intercepts: $(-5, 0)$, $(2, 0)$; y -intercept: $(0, 10)$
- c. x -intercepts: $(-5, 0)$, $(2, 0)$; y -intercept: $(0, -10)$
- d. x -intercepts: $(-5, 0)$, $(-2, 0)$, $(2, 0)$; y -intercept: $(0, 10)$
- e. x -intercepts: $(-5, 0)$, $(-2, 0)$, $(2, 0)$; y -intercept: $(0, -10)$

ANS: D PTS: 1 DIF: Easy REF: 1.1.24
 OBJ: Calculate the intercepts of an equation MSC: Skill
 NOT: Section 1.1

8. Test for symmetry with respect to each axis and to the origin.

$$x^2y^2 = 8$$

- a. symmetric with respect to the origin
- b. symmetric with respect to the x -axis
- c. symmetric with respect to the y -axis
- d. no symmetry
- e. A, B, and C

ANS: E PTS: 1 DIF: Easy REF: 1.1.34
 OBJ: Identify the type of symmetry of the graph of an equation
 MSC: Skill NOT: Section 1.1

9. Test for symmetry with respect to each axis and to the origin.

$$y = \frac{x^2 + 2}{x}$$

- a. symmetric with respect to the origin
- b. symmetric with respect to the y -axis
- c. symmetric with respect to the x -axis
- d. both B and C
- e. no symmetry

ANS: A

PTS: 1

DIF: Easy

REF: 1.1.37

OBJ: Identify the type of symmetry of the graph of an equation

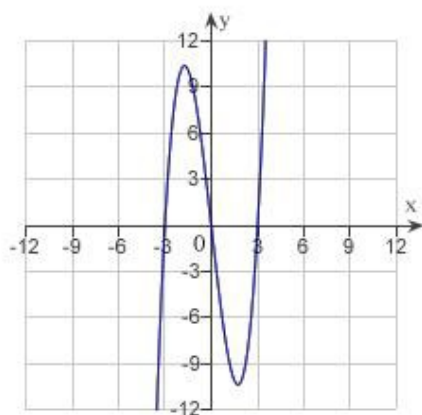
MSC: Skill

NOT: Section 1.1

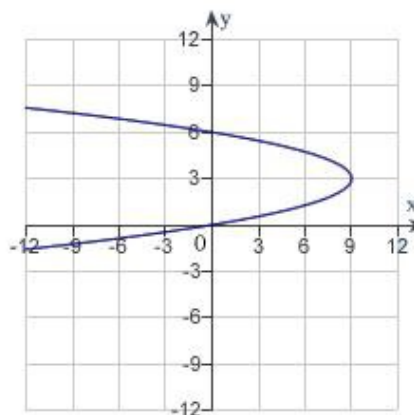
10. Sketch the graph of the equation:

$$x = y^3 - 9y$$

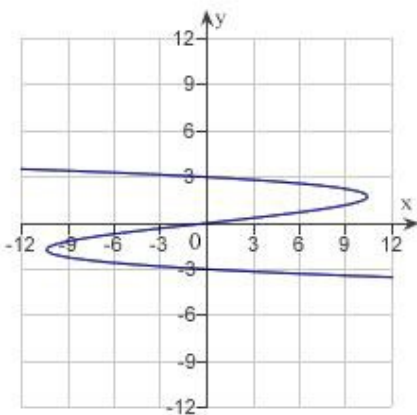
a.



d.

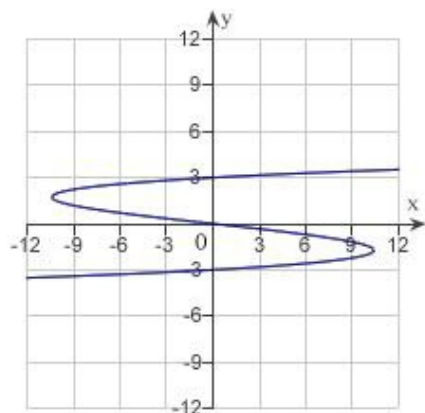


b.



e. none of the above

c.



ANS: C

PTS: 1

DIF: Medium

REF: 1.1.53

OBJ: Graph a cubic equation in y

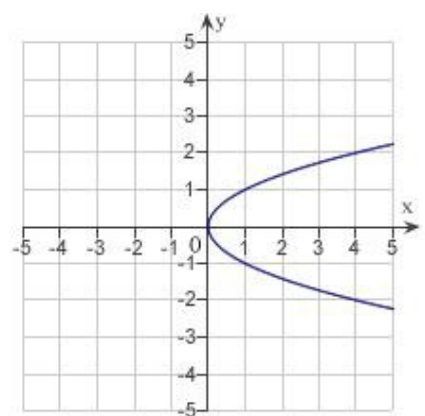
MSC: Skill

NOT: Section 1.1

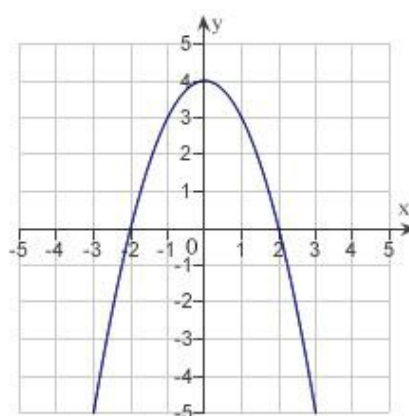
11. Sketch the graph of the equation:

$$x = 4 - y^2$$

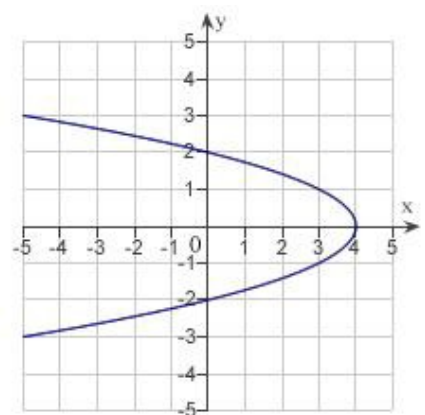
a.



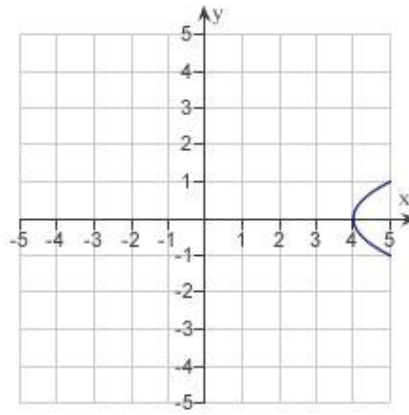
d.



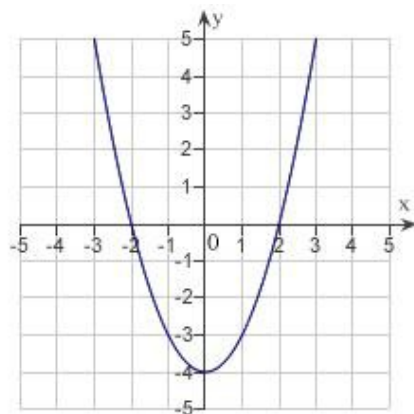
b.



e.



c.



ANS: B

PTS: 1

DIF: Easy

REF: 1.1.54

OBJ: Graph a quadratic equation in y

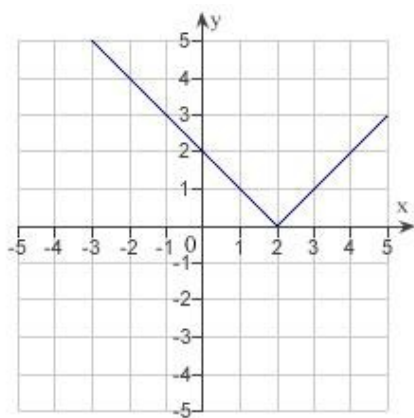
MSC: Skill

NOT: Section 1.1

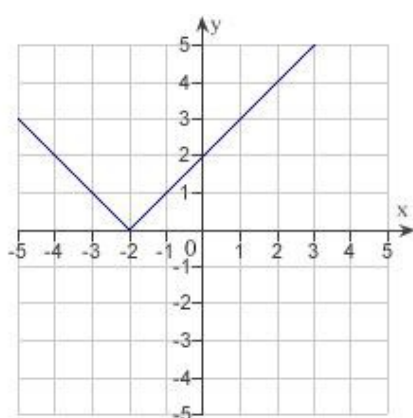
12. Sketch the graph of the equation:

$$y = |x + 2|$$

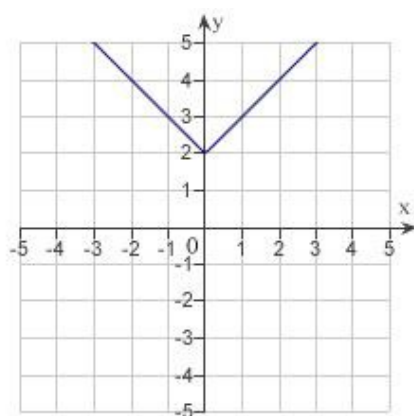
a.



d.

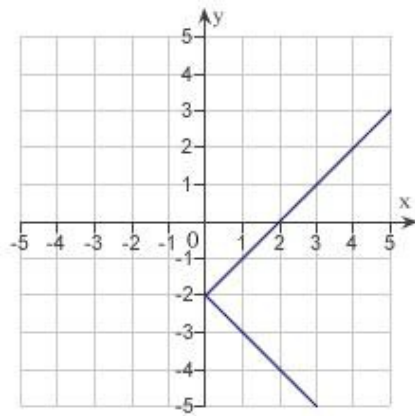


b.



e. none of the above

c.



ANS: D PTS: 1 DIF: Medium REF: 1.1.58
 OBJ: Graph an absolute value equation MSC: Skill NOT: Section 1.1

13. Find the points of intersection of the graphs of the equations:

$$x = y^2 - 3$$

$$y = x + 1$$

- a. $(-2, 1), (-1, 2)$
- b. $(-2, 0), (1, 2)$
- c. $(-2, -1), (1, 2)$
- d. $(2, -1), (-1, 2)$
- e. $(-2, -3), (-1, 2)$

ANS: C PTS: 1 DIF: Medium REF: 1.1.66
 OBJ: Calculate the points of intersection of the graphs of equations
 MSC: Skill NOT: Section 1.1

14. The table given below shows the Consumer Price Index (CPI) for selected years. Use the regression capabilities of a graphing utility to find a mathematical model of the form $y = at^2 + bt + c$ for the data. In the model, y represents the CPI and t represents the year, with $t = 5$ corresponding to 1975. Round all numerical values in your answer to three decimal places.

Year	1975	1980	1985	1990	1995	2000	2005
CPI	57.8	80.6	103.6	130.7	152.4	170.5	192.5

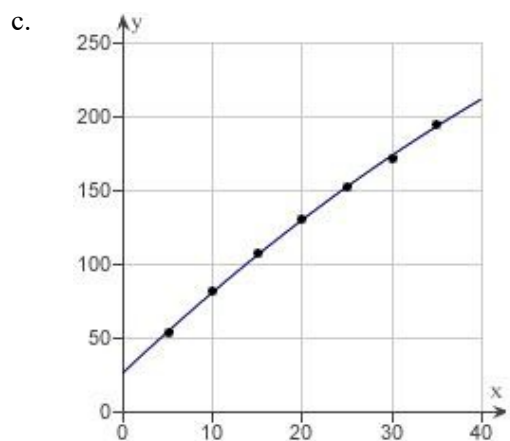
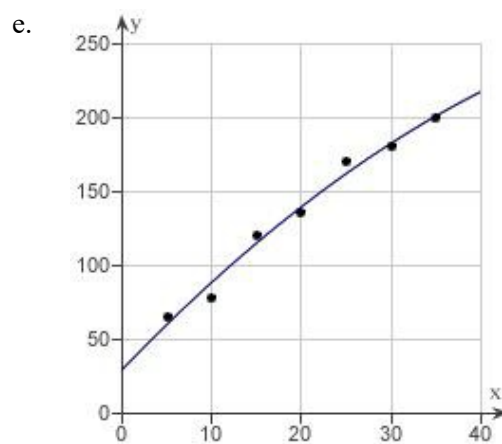
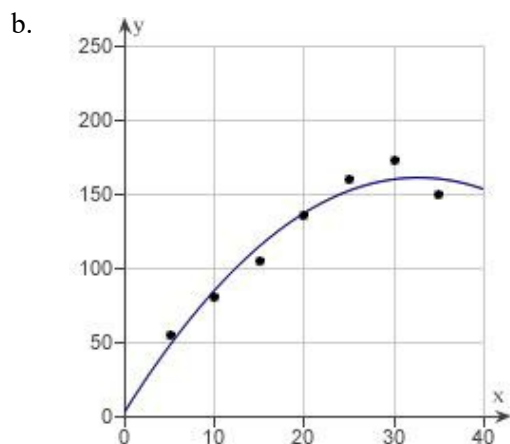
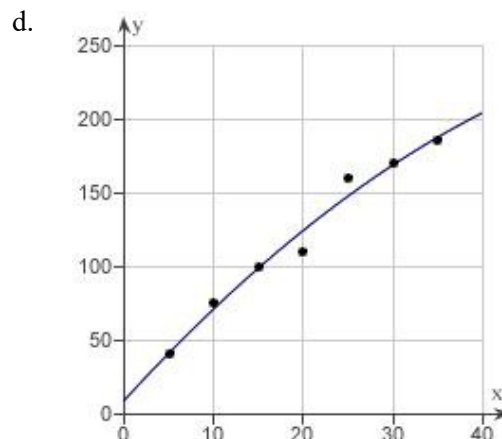
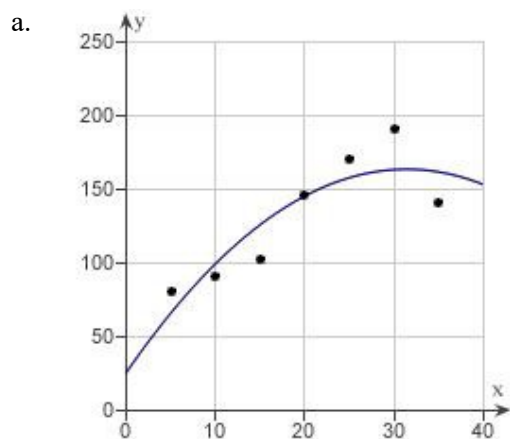
- a. $y = -0.019t^2 + 5.268t + 30.871$
- b. $y = -0.019t^2 - 5.957t + 30.871$
- c. $y = -0.016t^2 - 5.957t - 30.871$
- d. $y = -0.019t^2 + 5.957t + 40.871$
- e. $y = -0.016t^2 + 5.268t + 40.871$

ANS: A PTS: 1 DIF: Easy REF: 1.1.75a

OBJ: Write a quadratic model for data using the regression capabilities of a graphing utility
 MSC: Application NOT: Section 1.1

15. The table given below shows the Consumer Price Index (CPI) for selected years. Use a graphing utility to plot the data and graph the model $y = -0.1476t^2 + 9.6462t + 3.8286$.

Year	1975	1980	1985	1990	1995	2000	2005
CPI	55.5	80.6	105.5	135.5	160.5	172.5	150.5



ANS: B PTS: 1 DIF: Easy REF: 1.1.75b
 OBJ: Plot a quadratic model for data using the regression capabilities of a graphing utility
 MSC: Application NOT: Section 1.1

16. The table given below shows the Consumer Price Index (CPI) for selected years. The mathematical model for the data given below is $y = -0.031t^2 + 5.887t + 24.429$, where y represents the CPI and t represents the year, with $t = 5$ corresponding to 1975. Use the model to predict the CPI for the year 2010. Round your answer to the nearest integer.

Year	1975	1980	1985	1990	1995	2000	2005
CPI	52.8	80	106.6	130.7	152.4	171.2	194.3

- a. $y = 211$
- b. $y = 209$
- c. $y = 192$
- d. $y = 173$
- e. $y = 210$

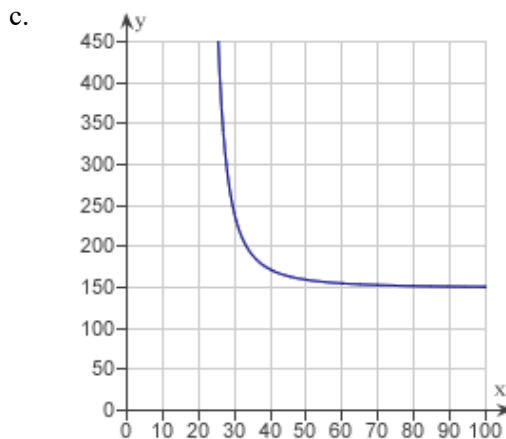
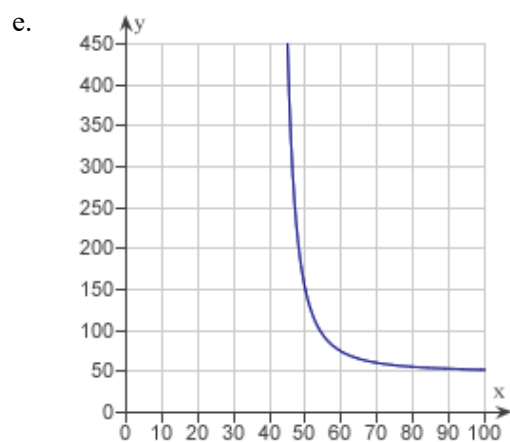
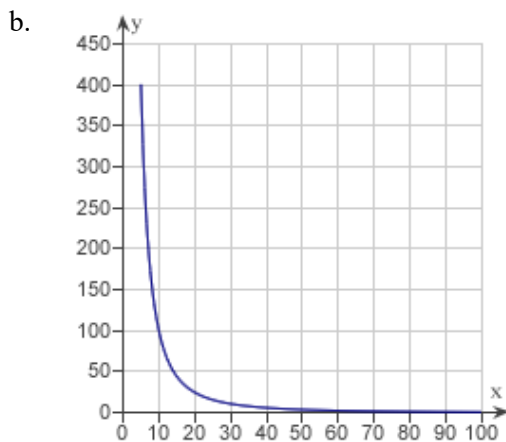
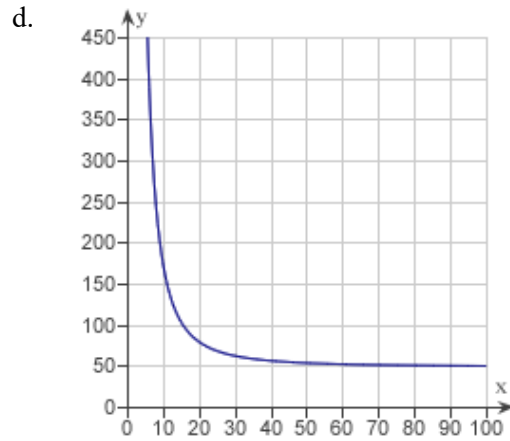
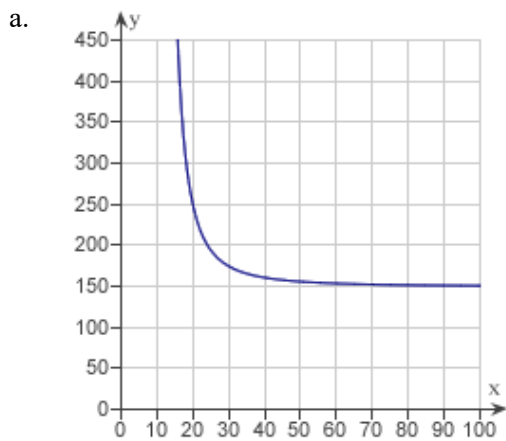
ANS: E PTS: 1 DIF: Easy REF: 1.1.75c
 OBJ: Evaluate a quadratic model in applications MSC: Application
 NOT: Section 1.1

17. Find the sales necessary to break even ($R = C$) if the cost C of producing x units is $C = 5.3\sqrt{x} + 40,000$ and the revenue R for selling x units is $R = 3.3x$. Round your answer to the nearest integer.

- a. $x \approx 6,244$ units
- b. $x \approx 12,334$ units
- c. $x \approx 12,305$ units
- d. $x \approx 12,299$ units
- e. $x \approx 6,239$ units

ANS: D PTS: 1 DIF: Medium REF: 1.1.77
 OBJ: Solve for the break-even point in applications MSC: Application
 NOT: Section 1.1

18. The resistance y in ohms of 1000 feet of solid metal wire at $77^\circ F$ can be approximated by the model $y = \frac{10,000}{x^2} - 0.57$, $5 \leq x \leq 100$, where x is the diameter of the wire in mils (0.001 in). Use a graphing utility to graph the model $y = \frac{10,000}{x^2} - 0.57$, $5 \leq x \leq 100$.



ANS: B PTS: 1 DIF: Medium REF: 1.1.78a
 OBJ: Plot a rational model using the capabilities of a graphing utility
 MSC: Application NOT: Section 1.1

19. The resistance y in ohms of 1000 feet of solid metal wire at 77°F can be approximated by the model $y = \frac{12,750}{x^2} - 0.37$, $5 \leq x \leq 100$, where x is the diameter of the wire in mils (0.001 in). If the diameter of the wire is doubled, the resistance is changed by approximately what factor? In determining your answer, you can ignore the constant -0.37 .

- a. 3
- b. $\frac{1}{2}$
- c. 4
- d. $\frac{1}{4}$
- e. $\frac{1}{3}$

ANS: D PTS: 1
OBJ: Interpret a rational model

DIF: Medium REF: 1.1.78b
MSC: Application NOT: Section 1.1