**CHAPTER R, FORM A**

**1.** $2250

**2. (a)** $f(-4) = 60; f(x-2) = 4x^2 - 15x + 14$

**3.** Slope: 3; $y$-intercept: 2

**4.** $y + 2 = \dfrac{2}{5}(x-5)$, or $y = \dfrac{2}{5}x - 4$

**5.** $-\dfrac{3}{4}$

**6.** $\dfrac{1}{2}$ in./mo

**7.** $-6\dfrac{2}{3}$ m/s

**8.** $d = \dfrac{16}{5}$ m

**9. (a)** $C(x) = 1.27x + 9200$

   **(b)** $R(x) = 4.25x$

   **(c)** $P(x) = 2.98x - 9200$

   **(d)** 3088 cups of coffee

**10.** $(1, 9); x = \$1, q = 9$ thousand units

**11.** Not a function

**12.** Function

**13.(a)** $f(0) = -3;$

   **(b)** $(-\infty, \infty);$

   **(c)** $-4, 2;$

   **(d)** $[-4, \infty)$

**14.(a)** $f(2) = 3;$

   **(b)** $[-4, 3]$

   **(c)** $x = 2;$

   **(d)** $[-5, 4]$

**15.**
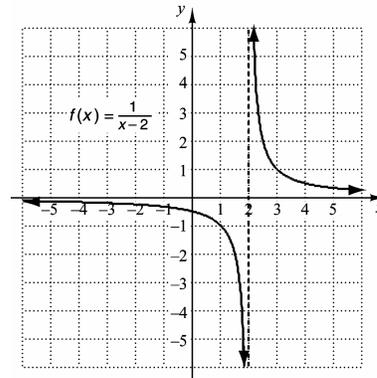


**16.** $2y^{-2/5}$

**17.** $\sqrt[10]{x^9}$

**18.**
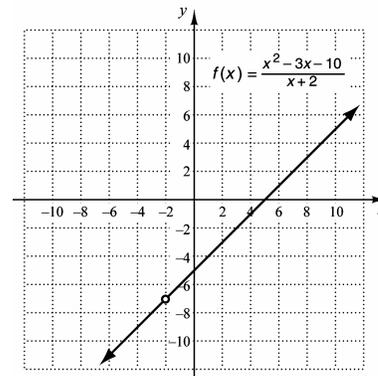


**19.** $(-\infty, -1) \cup (-1, 2) \cup (2, \infty)$

**20.** $(-4, \infty)$

**21.** $(m, n)$

**22.**
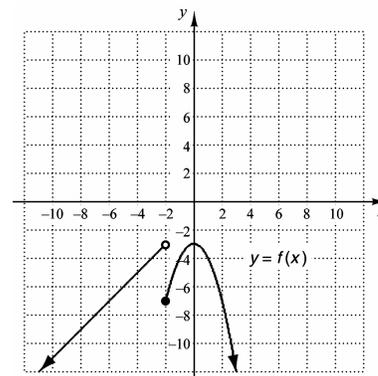
**CHAPTER R, FORM A (continued)**

**23. (a)**
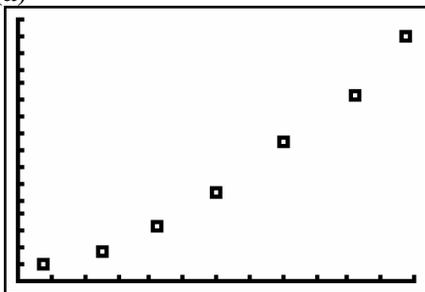


**(b)** Yes

**(c)** $y = 0.0015x^2 + 0.0344x + 0.3288$

**(d)** $8.90 per movie ticket

**24.** $\dfrac{1}{8}$

**25.** $(x+8)(x-1)(x-2) = 0$; answers will vary.

**26.** $-7$

**27.**
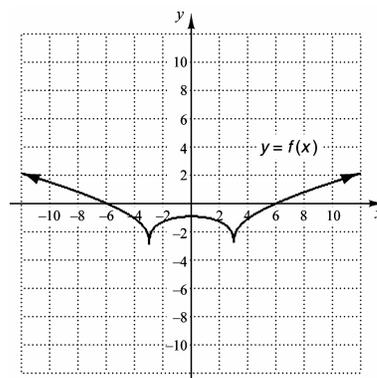


Zeros: $-6, 6$; domain: $(-\infty, \infty)$; range: $[-3, \infty)$

**28. (a)** $y = 0.0014126197x^2 + 0.0382581273x$
$\qquad + 0.2446179716$

**(b)** $8.70

---

**CHAPTER R, FORM B**

**1.** $1100

**2. (a)** $f(-2) = -12$

**(b)** $f(x+a) = 2x^3 + 6x^2a + 6xa^2 + 4 + 2a^3$

**3.** Slope: 0.5; $y$-intercept: $-8$

**4.** $y + 2 = \dfrac{5}{8}(x-6)$, or $y = \dfrac{5}{8}x - \dfrac{23}{4}$

**5.** $-\dfrac{5}{4}$

**6.** $-$200 / year

**7.** $\dfrac{8}{3}$ million/year or about 2.67 million/year

**8.** $P = \dfrac{63}{160}D$

**9. (a)** $C(x) = 18x + 135{,}000$

**(b)** $R(x) = 45x$

**(c)** $P(x) = 27x - 135{,}000$

**(d)** 5000 manicures/pedicures

**10.** $(5, 9)$; $x = $5, q = 9$ thousand units

**11.** Function

**12.** Not a function

**13. (a)** $f(1) = 4$

**(b)** $(-\infty, \infty)$

**(c)** $-2, 2$

**(d)** $(-\infty, 5]$

**14. (a)** $f(5) = 1$

**(b)** $(-\infty, \infty)$

**(c)** $-3, 3$

**(d)** $(-\infty, \infty)$

**15.**
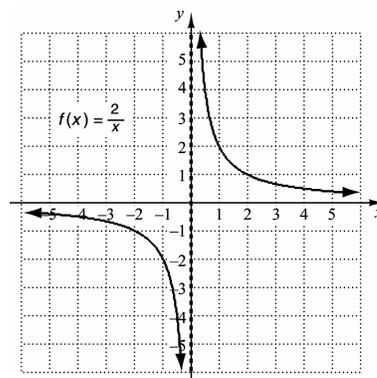


**16.** $6\, m^{-1/5}$

**CHAPTER R, FORM B (continued)**

**17.** $\dfrac{1}{\sqrt[4]{x^3}}$

**18.**
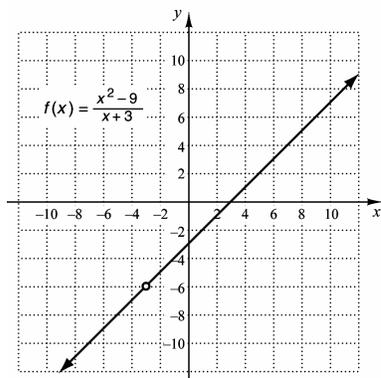


**19.** $(-\infty, -2) \cup (-2, 6) \cup (6, \infty)$

**20.** $(7, \infty)$

**21.** $[a, \infty)$

**22.**
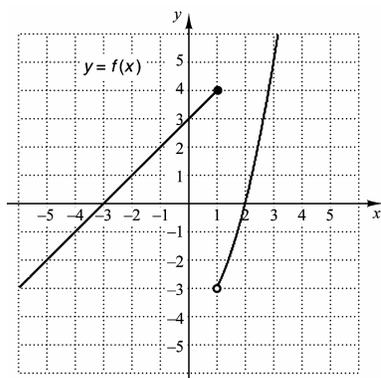


**23. (a)**
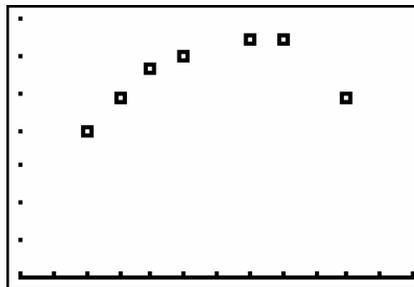


**(b)** Yes

**(c)** $y = -\dfrac{17}{750}x^2 + \dfrac{71}{30}x - \dfrac{153}{5}$

**(d)** 27.5 mpg

**24.** $\dfrac{1}{32}$

**25.** $(x+2)(x-4)(x-6) = 0$; answers will vary.

**26.** 1

**27.**
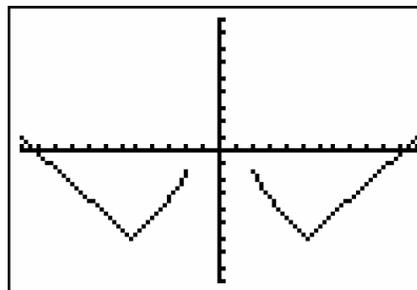


Zeros: $\pm 5\sqrt{5} \cong \pm 11.18$; domain:
$(-\infty, -2] \cup [2, \infty)$;
range $[-6, \infty)$

**28. (a)** $y = -0.0248917749x^2 + 2.618831169x - 36.75757576$

**(b)** 28.3 mpg

---

**CHAPTER R, FORM C**

**1.** $750

**2. (a)** $f(-4) = 52$

**(b)** $f(x+a) = 3x^2 + 6xa + 3a^2 - x - a$

**3.** Slope: 4; $y$-intercept: $-\dfrac{1}{2}$

**4.** $y + 3 = -\dfrac{2}{5}(x-5)$, or $y = -\dfrac{2}{5}x - 1$

**5.** $-\dfrac{3}{4}$

**6.** 8 mi/min

**7.** $-1666\dfrac{2}{3}$ ft/mph

**8.** $P = 0.00665B$

**CHAPTER R, FORM C (continued)**

**9. (a)** $C(x) = 80x + 500,000$

   **(b)** $R(x) = 175x$

   **(c)** $P(x) = 95x - 500,000$

   **(d)** 5264

**10.** $(2, 16); x = \$2, q = 16$ thousand units

**11.** Yes

**12.** No

**13. (a)** $f(3) = -2$

   **(b)** $(-\infty, \infty)$

   **(c)** 1, 3

   **(d)** $[-3, \infty)$

**14. (a)** $f(3) = 2$

   **(b)** $[-3, 4]$

   **(c)** $-\dfrac{1}{2}, 3$

   **(d)** $[-4, 4.5]$

**15.**
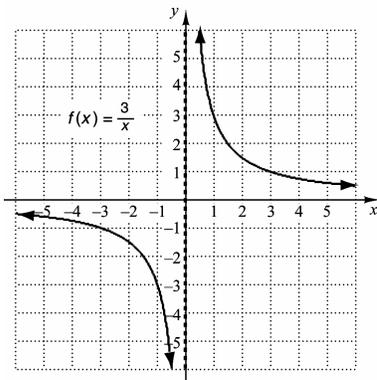


**16.** $4m^{-5/6}$

**17.** $\dfrac{1}{\sqrt[3]{y}}$

**18.**
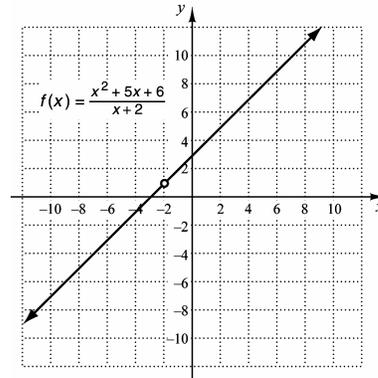


**19.** $(-\infty, -4) \cup (-4, 8) \cup (8, \infty)$

**20.** $\left[\dfrac{5}{3}, \infty\right)$

**21.** $(a, d]$

**22.**
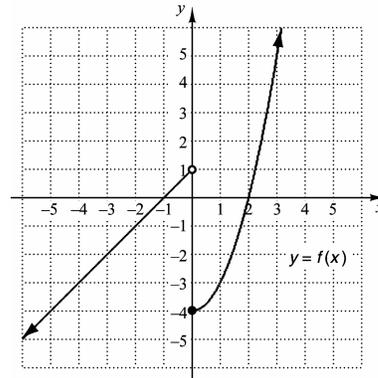


**23. (a)**
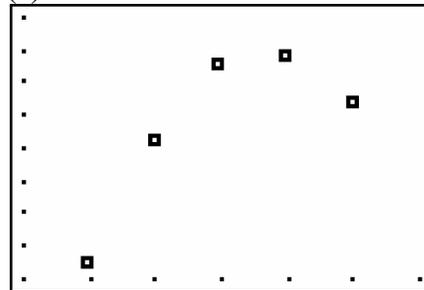


   **(b)** Yes

   **(c)** $y = -44.4425x^2 + 4135.8325x$
   $\qquad - 31449.473$

   **(d)** $40,291

**24.** 5

**25.** $x(x + 2)(x - 5) = 0$; answers may vary.

**26.** 1

**CHAPTER R, FORM C (continued)**

**27.**
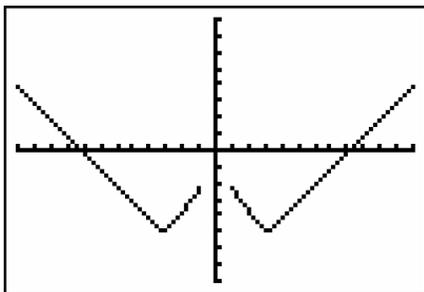


Zeros: $\pm\sqrt{65} \cong \pm 8.06$; domain: $(-\infty, -1] \cup [1, \infty)$;
range: $[-5, \infty)$

**28. (a)** $y = -44.69928571x^2$
$\qquad + 4160.633571x - 32016.30839$

**(b)** \$40,202

---

**CHAPTER R, FORM D**

**1.** \$1500

**2. (a)** $f(-1) = 5$

**(b)** $f(a - 3) = 2a^2 - 12a + 21$

**3.** Slope: 1.5; $y$-intercept: 6

**4.** $y + 6 = \frac{2}{3}(x - 3)$, or $y = \frac{2}{3}x - 8$

**5.** $-2$

**6.** $-\$700/\text{yr}$

**7.** $\frac{1}{4}\text{km/min}$

**8.** $R = 2.85g$

**9. (a)** $C(x) = 28x + 21,000$

**(b)** $R(x) = 54.95x$

**(c)** $P(x) = 26.95x - 21,000$

**(d)** 780

**10.** $(5.25, 3.0625)$; $x = \$5.25, q = 3.0625$
thousand units

**11.** Not a function

**12.** Function

**13. (a)** $f(2) = -3$

**(b)** $(-\infty, \infty)$

**(c)** $0, 4$

**(d)** $[-3, \infty)$

**14. (a)** $f(1) = -2$

**(b)** $[-4, 2]$

**(c)** $x = -2$

**(d)** $[-3, 3]$

**15.**
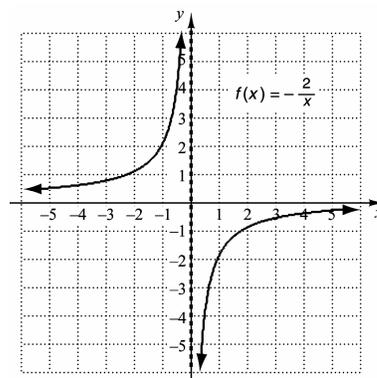


**16.** $3n^{-1/4}$

**CHAPTER R, FORM D (continued)**

**17.** $\dfrac{1}{\sqrt[3]{y^2}}$

**18.**
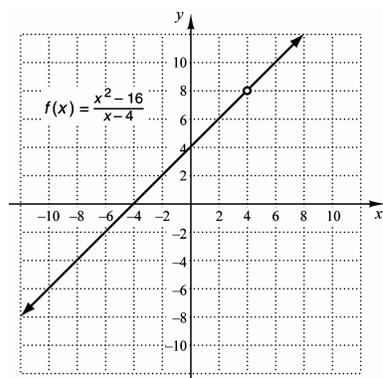


**19.** $(-\infty, -2) \cup (-2, 5) \cup (5, \infty)$

**20.** $\left(-\dfrac{1}{5}, \infty\right)$

**21.** $(p, q]$

**22.**
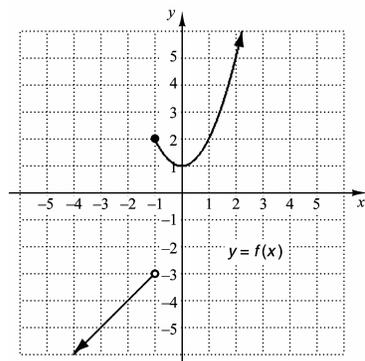


**23.(a)**
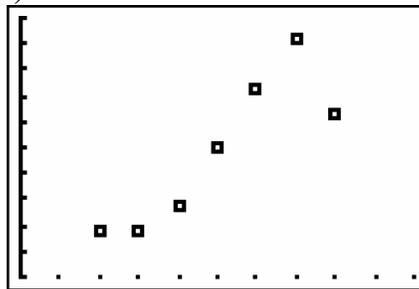


**(b)** No, the shape is not parabolic

**(c)** $y = \dfrac{-9533}{20}x^2 + \dfrac{22771}{4}x + 29119.6$

**(d)** 7265 full-time female income earners

**24.** $\dfrac{1}{5}$

**25.** $x(x-6)(x+5) = 0$; answers may vary.

**26.** $-2$

**27.**
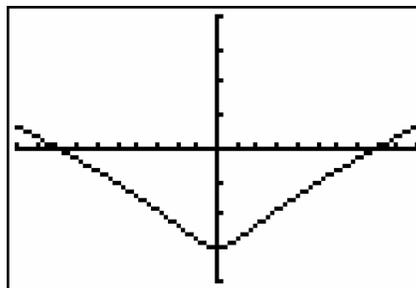


Zeros: $-7.94, 7.94$; domain: $(-\infty, \infty)$;
range: $[-3, \infty)$

**28.(a)** $y = -60.63095238x^2 + 1196.77381x$
$\qquad\qquad - 39221.14286$

**(b)** 44,531 full-time female income earners

---

**CHAPTER R, FORM E**

**1.** $1850

**2. (a)** $f(-2) = -12$

**(b)** $f(x+h) = x^3 + 3x^2h + 3xh^2 + h^3 - 4$

**3.** Slope: $-4$; $y$-intercept: 5

**4.** $y = -\dfrac{5}{8}(x-4)$, or $y = -\dfrac{5}{8}x + \dfrac{5}{2}$

**5.** $\dfrac{10}{7}$

**6.** $-25$ mi/hr

**7.** 3 mph

**8.** $E = 0.84d$

**CHAPTER R, FORM E (continued)**

**9. (a)** $C(x) = 9x + 27,750$

   **(b)** $R(x) = 18.25x$

   **(c)** $9.25x - 27,750$

   **(d)** $3000$

**10.** $(1.5, 12.25); x = \$1.50, q = 12.25$ thousand units

**11.** Not a function

**12.** Function

**13. (a)** $f(-2) = -1$

   **(b)** $(-\infty, \infty)$

   **(c)** $-4, 0$

   **(d)** $[-1, \infty)$

**14. (a)** $f(-2) = -2$

   **(b)** $[-5, 4)$

   **(c)** $[1, 4)$

   **(d)** $[-5, 1]$

**15.**



$f(x) = \dfrac{6}{x-3}$

**16.** $5n^{-2/3}$

**17.** $\sqrt[4]{y^3}$

**18.**



$f(x) = \dfrac{x^2 + 2x - 8}{x + 4}$

**19.** $(-\infty, -2) \cup (-2, 3) \cup (3, \infty)$

**20.** $[-6, \infty)$

**21.** $[a, c]$

**22.**



$y = f(x)$
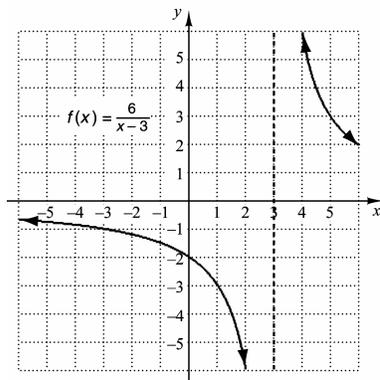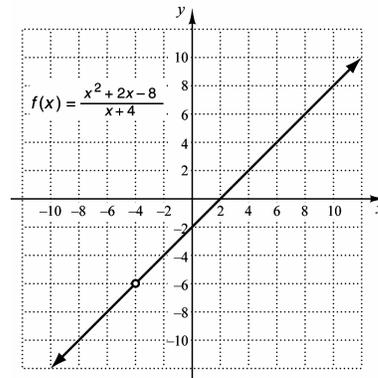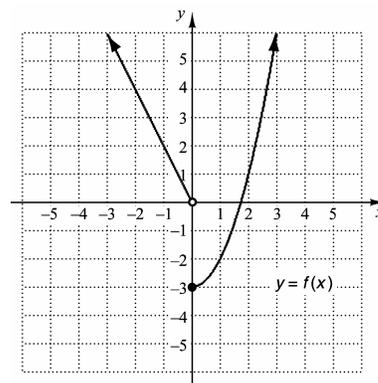
**23. (a)**
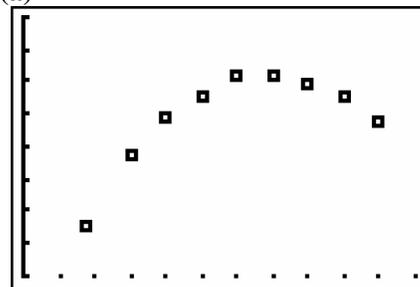


   **(b)** Yes

   **(c)** $y = -0.0038095238x^2 + 1.061904762x + 8$

   **(d)** 81.07 ft

**24.** $\dfrac{1}{9}$

**25.** $(x-2)(x+4)(x-6) = 0$; answers will vary.

**26.** 6

**CHAPTER R, FORM E (continued)**

**27.**
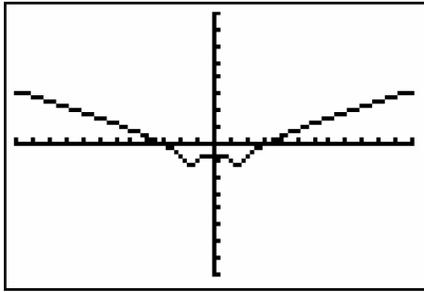


Zeros: $\pm\sqrt{10} \cong \pm 3.16$; domain: $(-\infty, \infty)$; range: $[-2, \infty)$

**28. (a)** $y = -0.0041918702x^2 + 1.16482439x$
$+1.711743592$

**(b)** 81.55 f t

---

**CHAPTER R, FORM F**

**1.** $1200

**2. (a)** $f(-7) = 142$;

**(b)** $f(x+1) = 3x^2 + 6x - 2$

**3.** Slope: $\dfrac{1}{2}$; $y$-intercept: -6

**4.** $y + 8 = -\dfrac{1}{4}(x-2)$; or $y = -\dfrac{1}{4}x - \dfrac{15}{2}$

**5.** $\dfrac{1}{3}$

**6.** $-1600\,\text{ft/min}$

**7.** $2500/yr

**8.** $E = 3M$

**9. (a)** $C(x) = 78x + 10{,}390$

**(b)** $R(x) = 129.95x$

**(c)** $P(x) = 51.95x - 10{,}390$

**(d)** 200 chairs

**10.** $(3.6, 5.76)$; $x = \$3.60, q = 5.76$ thousand units

**11.** Not a function

**12.** Function

**13. (a)** $f(3) = -1$

**(b)** $(-\infty, \infty)$

**(c)** 1

**(d)** $(-\infty, 3]$

**14. (a)** $f(-2) = 4$;

**(b)** $\{-3, -2, -1, 0, 1, 2, 3, 4\}$;

**(c)** $\{-2, -1, 0\}$;

**(d)** $\{-2, 0, 4, 5\}$

**15.**
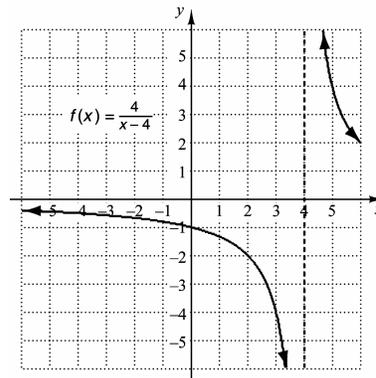


**16.** $3x^{-1/2}$

**17.** $\dfrac{1}{\sqrt[9]{y^5}}$

**CHAPTER R, FORM E (continued)**

**18.**
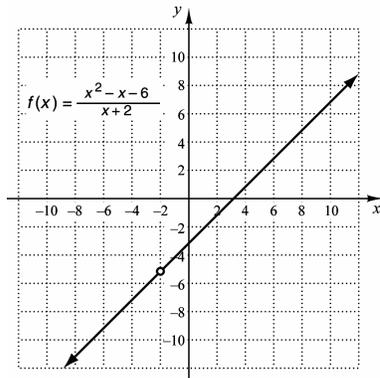


**19.** $(-\infty, -3) \cup (-3, 4) \cup (4, \infty)$

**20.** $(8, \infty)$

**21.** $(a, b]$

**22.**
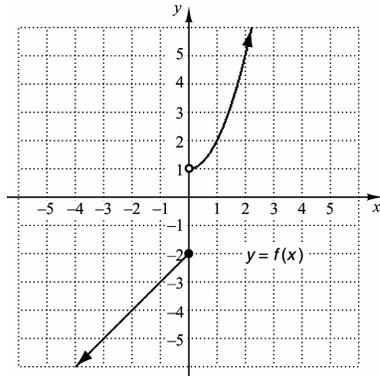


**23. (a)**
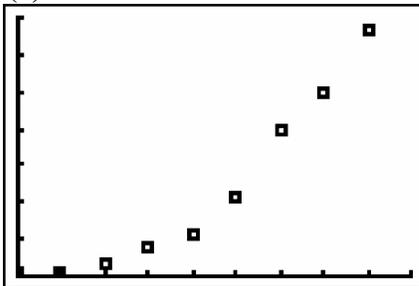


**(b)** Yes

**(c)** $y = \dfrac{2999}{1050}x^2 - \dfrac{2407}{70}x + \dfrac{3056}{21}$

**(d)** $5566.7 thousand, or $5,566,700

**24.** $\dfrac{1}{3}$

**25.** $(x+1)(x-4)(x+2) = 0$; Answers will vary.

**26.** $f(3) = 14$

**27.**
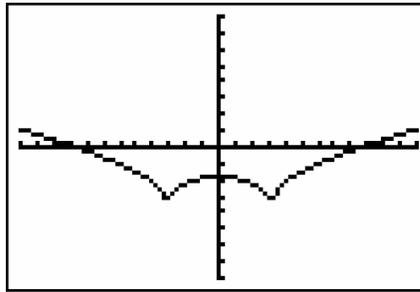


Zeros: $\pm\sqrt{74} \cong \pm 8.6$; domain: $(-\infty, \infty)$;
range: $[-4, \infty)$

**28. (a)** $y = 2.542813853x^2 - 18.55588745x$
$+ 47.41212121$

**(b)** $5,477 thousand, or $5,477,000

## CHAPTER 1, FORM A

**1. (a)** $9, 9.7, 9.9, 9.99, 9.999, 9.9999$;

         $11, 10.5, 10.1, 10.01, 10.001, 10.0001$

    **(b)** 10, 10, and 10

**2. (a)** 10
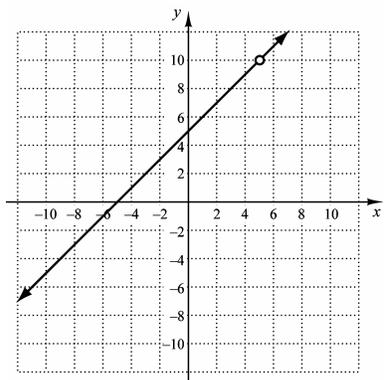
    **(b)** 10

**3.** 5

**4.** Does not exist

**5.** 1

**6.** Does not exist

**7.** 3

**8.** 4

**9.** Continuous

**10.** Discontinuous since $\lim_{x \to a} f(x)$ does not exist for

     $a = -6, -4, -2, 2, 4, 6$

**11.** Does not exist

**12.** 2

**13.** No

**14.** 1

**15.** 1

**16.** Yes

**17.** 178

**18.** $-\dfrac{1}{9}$

**19.** Does not exist

**20.** $-3(2x + h)$

**21.** $y = \dfrac{14}{3}x - 4$

**22.** $(0,0), \left(\dfrac{4}{3}, -\dfrac{32}{27}\right)$

**23.** $17x^{16}$

**24.** $2x^{-3/4} - \dfrac{3}{2}x^{-1/2}$

**25.** $\dfrac{24}{x^4}$

**26.** $\dfrac{3}{8}x^{-5/8}$

**27.** $1.28x^3 - 14x$

**28.** $5x^7 - 24x^5 + 5$

**29.** $\dfrac{8}{(x-4)^2}$

**30.** $(3-x)^3(x+5)^2(-7x-11)$

**31.** $-8(6x-5)(6x^2 - 10x + 1)^{-5}$

**32.** $\dfrac{5x^3 - 12}{2\sqrt{x^3 - 16}}$

**33.** $480x^3 - 54$

**34. (a)** $A_R = 40,\ A_C = x^{-3/4} + \dfrac{650}{x}$,

         $A_P = 40 - x^{-3/4} - \dfrac{650}{x}$

    **(b)** Average cost is dropping at approximately

       $2.90 per item.

**35. (a)** $\dfrac{dV}{dr} = 4\pi r^2$

    **(b)** $\dfrac{\pi}{6}$ in$^3$

    **(c)** $\pi$ in$^3$/in

**36.** $(f \circ g)(x) = x^6 - 2x^3 + 10$;

     $(g \circ f)(x) = x^6 + 27x^4 + 243x^2 + 728$

**37.** $\dfrac{-7x - 18}{4(2 - 3x)^{2/3}(x+5)^{3/4}}$

**CHAPTER 1, FORM A (continued)**

**38.** 12

**39.** (0.37435329, 3.0910298)

(1.8975696, −7.910868)



**40.** $\dfrac{1}{4}$ or 0.25

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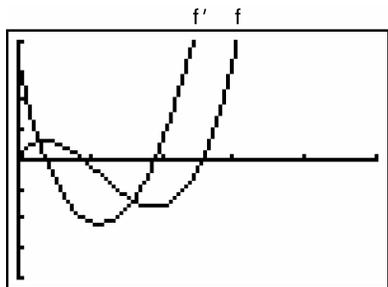
**CHAPTER 1, FORM B**

**1. (a)** 5, 5.7, 5.9, 5.99, 5.999, 5.9999;

7, 6.5, 6.1, 6.01, 6.001, 6.0001

**(b)** 6, 6 and 6

**2. (a)** 6
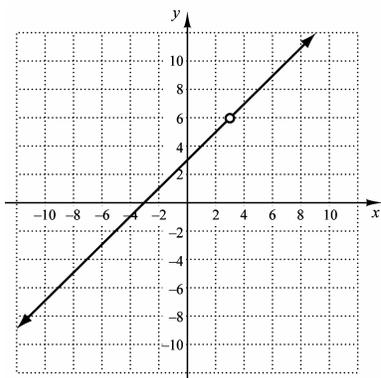


**(b)** 6

**3.** 2

**4.** Does not exist

**5.** Does not exist

**6.** 1

**7.** 2

**8.** 5

**9.** Continuous

**10.** Not continuous, since $\lim\limits_{x \to 2} f(x)$ does not exist

**11.** 3

**12.** 3

**13.** Yes

**14.** Does not exist

**15.** −2

**16.** No

**17.** 2

**18.** $\dfrac{1}{9}$

**19.** Does not exist

**20.** $-10x - 5h$

**21.** $y = -\dfrac{7}{2}x + 6$

**22.** (0,0), (−1,3)

**23.** $53y^{52}$

**24.** $\dfrac{5}{3}x^{-2/3} + 2x^{-1/2}$

**25.** $\dfrac{22}{x^3}$

**26.** $\dfrac{2}{5}x^{-3/5}$

**27.** $0.54x^2 - 10x$

**28.** $2x^2 - 8x + 10$

**CHAPTER 1, FORM B (continued)**

**29.** $\dfrac{-(15x+8)}{x^5}$

**30.** $(x+2)^2(2-x)(2-5x)$

**31.** $-20x(3x^2-2)(3x^4-4x^2+6)^{-6}$

**32.** $\dfrac{5x^2-20x}{2\sqrt{x-5}}$

**33.** $120x$

**34. (a)** $A_R=50$, $A_C=x^{-2/5}+\dfrac{750}{x}$,

$\quad\quad A_P=50-x^{-2/5}-\dfrac{750}{x}$

**(b)** Average cost is dropping by approximately $5.22 per item.

**35. (a)** $\dfrac{dW}{dr}=1.82-0.1192t+0.002274t^2$

**(b)** 26.02 lb

**(c)** 0.4112 lb/month

**36.** $(f\circ g)(x)=x+6\sqrt{x}+5$

$\quad\quad (g\circ f)(x)=\sqrt{4x+x^2}+1$

**37.** $\dfrac{-(25+44x)}{3(5-4x)^{1/3}(5+4x)^{3/4}}$

**38.** 27

**39.** $(0.8610, 15.2837)$, $(3.3413, -15.6609)$
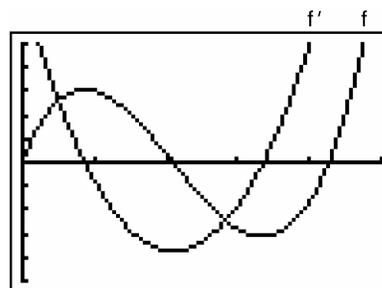


**40.** $-\dfrac{7}{8}$   or   $-0.875$

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 **CHAPTER 1, FORM C**

**1. (a)** $7, 7.7, 7.9, 7.99, 7.999, 7.9999$

$\quad\quad 9, 8.5, 8.1, 8.01, 8.001, 8.0001$

**(b)** 8, 8, and 8

**2. (a)** 8
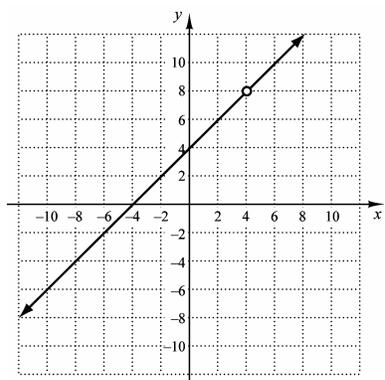


**(b)** 8

**3.** Does not exist

**4.** 0

**5.** Does not exist

**6.** $-3$

**7.** 1

**8.** 6

**9.** Continuous

**10.** Not continuous since $\lim\limits_{x\to-3} f(x)\neq f(-3)$.

**11.** $-3$

**12.** 1

**13.** No

**14.** 4

**15.** 4

**16.** Yes

**17.** $-49$

**18.** $-7$

**19.** Does not exist

**20.** $8x+4h$

**21.** $y=-2x+4$

**22.** $(-1, 6), (1, -6)$

**CHAPTER 1, FORM C (continued)**

**23.** $46x^{45}$

**24.** $\dfrac{5}{3}x^{-2/3} + x^{-1/2}$

**25.** $\dfrac{49}{x^8}$

**26.** $\dfrac{7}{3}x^{4/3}$

**27.** $18.9x^2 - 8x$

**28.** $-2x^2 + 32x + 4$

**29.** $\dfrac{-2(3x-2)}{x^5}$

**30.** $(x+5)^4(4-x)(10-7x)$

**31.** $-3x(9x-10)(3x^3 - 5x^2 + 8)^{-4}$

**32.** $\dfrac{3x^4 + 2}{\sqrt{x^4 + 2}}$

**33.** $360x^3 - 24$

**34.** (a) $A_R = 25,\ A_C = x^{-3/5} + \dfrac{400}{x},$

$A_P = 25 - x^{-3/5} - \dfrac{400}{x}$

(b) Average cost is dropping at approximately $1,24 per item.

**35.** (a) $\dfrac{dP}{dt} = 15 - 2t$

(b) 114 ppb

(c) 3 ppb/hr

**36.** $(f \circ g)(x) = 108x^6 + 6x^3$

$(g \circ f)(x) = -6x^3(3x-1)^3,$ or

$-6x^3(27x^3 - 27x^2 + 9x - 1)$

**37.** $\dfrac{-(12x+5)}{5(4-3x)^{2/5}(x+1)^{4/5}}$

**38.** 12

**39.** $(-0.0999004,\ 2.04998),$

$(1.0313292,\ -2.015982)$
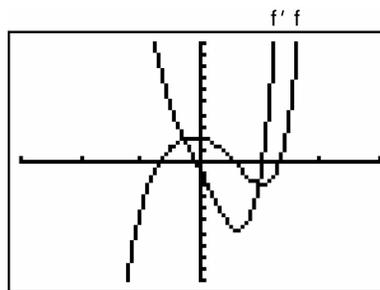


**40.** $-\dfrac{1}{2}$ or $-0.5$

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**CHAPTER 1, FORM D**

**1.** (a) $-9, -8.5, -8.1, -8.01, -8.001, -8.0001;$

$-7, -7.7, -7.9, -7.99, -7.999, -7.9999$

(b) $-8, -8,$ and $-8$

**2.** (a) $-8$
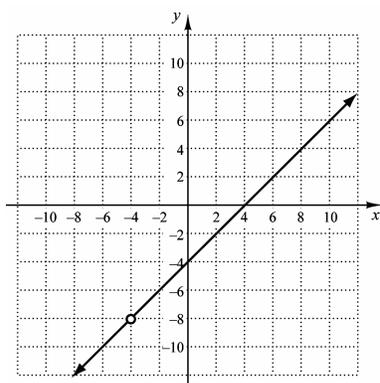


(b) $-8$

**3.** Does not exist

**4.** $-1$

**5.** 2

**6.** 0

**7.** Does not exist

**8.** 4

**9.** Discontinuous because $\lim\limits_{x \to a} f(x)$ for

$a = -4, -2, 2, 4$ does not exist

**10.** Continuous

**11.** $-1$

**12.** $-1$

**13.** Yes

**14.** Does not exist

**CHAPTER 1, FORM D (continued)**

**15.** 1

**16.** No

**17.** 0

**18.** $\dfrac{1}{24}$

**19.** Does not exist

**20.** $6x + 3h - 7$

**21.** $y = \dfrac{22}{5}x - 4$

**22.** $(0,0),\ (1,-1)$

**23.** $28x^{27}$

**24.** $\dfrac{1}{2}x^{-3/4} - 2x^{-1/2}$

**25.** $\dfrac{-32}{x^9}$

**26.** $\dfrac{2}{7}x^{-5/7}$

**27.** $8.1x^2 - 6x$

**28.** $\dfrac{1}{2}x^4 + 12x^3 - 6$

**29.** $\dfrac{x-12}{x^3}$

**30.** $(x+1)^2(6-x)(16-5x)$

**31.** $-4(6x^2 + 32x - 3)(2x^3 + 16x^2 - 3x)^{-5}$

**32.** $\dfrac{4x^5 - 2x}{\sqrt{x^4 - 1}}$

**33.** $240x^3$

**34. (a)** $A_R = 45,\ A_C = x^{-1/4} + \dfrac{550}{x},$

$A_P = 45 - x^{-1/4} - \dfrac{550}{x}$

**(b)** Average cost is dropping at approximately $1.38 per item.

**35. (a)** $\dfrac{dP}{dt} = 3600t$

**(b)** 770,000 people

**(c)** 72,000 people/year

**36.** $(f \circ g)(x) = \sqrt{x^2 + x + 4}$

$(g \circ f)(x) = x + 4 + \sqrt{x + 4}$

**37.** $\dfrac{3 - 8x}{8(5 - 2x)^{7/8}(x+6)^{5/8}}$

**38.** 75

**39.** $(0.37260293,\ 1.2364915),$

$(1.734937,\ -1.511481)$
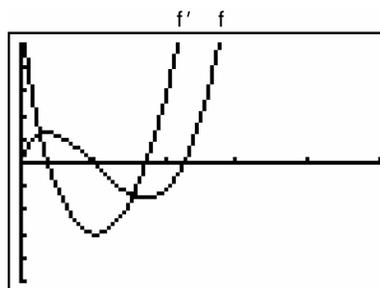


**40.** $\dfrac{3}{5}$ or 0.60

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**CHAPTER 1, FORM E**

1. (a) $-11, -10.5, -10.1, -10.01, -10.001,$
   $-10.001;$
   $-9, -9.7, -9.9, -9.99, -9.999,$
   $-9.9999$
   (b) $-10, -10,$ and $-10$

2. (a) $-10$
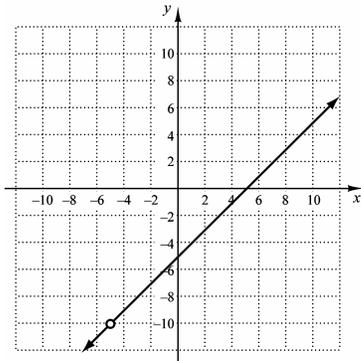


   (b) $-10$

3. Does not exist

4. Does not exist

5. 1

6. $-1$

7. Does not exist

8. 1

9. Not continuous, since $\lim_{x \to 0} f(x)$ does not exist

10. Continuous

11. $-3$

12. $-3$

13. Yes

14. Does not exist

15. 1

16. No

17. $-4$

18. $\dfrac{1}{18}$

19. Does not exist

20. $10x + 5h - 8$

21. $y = -x + 6$

22. $(0,0), (2,-4)$

23. $113x^{112}$

24. $\dfrac{5}{3}x^{-2/3} + 3x^{-1/2}$

25. $\dfrac{-600}{x^6}$

26. $\dfrac{4}{5}x^{-1/5}$

27. $2.36x^3 - 12x$

28. $3x^3 - 10x + 4$

29. $\dfrac{9}{(x-3)^2}$

30. $(3-x)^2(x+1)^2(5-7x)$

31. $-8x^{-9}(6+5x^3+3x^4)(6+2x^3+x^4)^{-5}$

32. $\dfrac{4x^6 - 2}{\sqrt{x^6 - 2}}$

33. $-180x^2$

34. (a) $A_R = 25, A_C = x^{-2/3} + \dfrac{1000}{x},$
    $A_P = 25 - x^{-2/3} - \dfrac{1000}{x}$
    (b) Average cost is dropping at approximately $1.60 per item.

35. (a) $\dfrac{dM}{dt} = -0.006t^2 + 0.2t$
    (b) 24 words
    (c) 1.6 words/minute

36. $(f \circ g)(x) = 2x^2 + 19x + 45$
    $(g \circ f)(x) = 2x^2 - x + 5$

37. $\dfrac{-5x - 2}{2(6-3x)^{5/6}(x+10)^{1/3}}$

38. 48

**CHAPTER 1, FORM E (continued)**          **40.** $0$

**39.** $(0.54368945, 3.8638885), (1, 3)$



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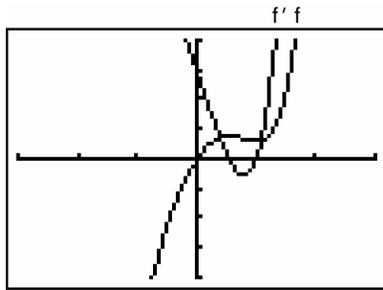
**CHAPTER 1, FORM F ANSWERS**

**1. (a)** $-7, -6.5, -6.1, -6.01, -6.001,$
      $-6.0001;$

      $-5, -5.7, -5.9, -5.99, -5.999,$
      $-5.9999$

**(b)** $-6, -6,$ and $-6$

**2. (a)** $-6$
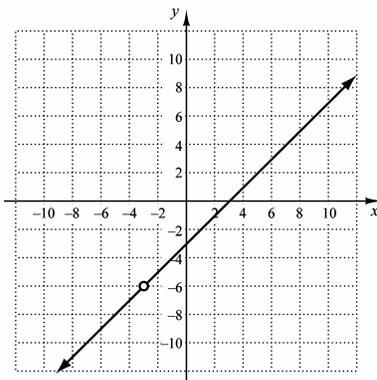


   **(b)** $-6$

**3.** $0$

**4.** Does not exist

**5.** $-2$

**6.** Does not exist

**7.** $3$

**8.** $-2$

**9.** Not continuous, since $\lim_{x \to -2} f(x)$ does not exist

**10.** Continuous

**11.** Does not exist

**12.** $2$

**13.** No

**14.** $5$

**15.** $5$

**16.** Yes

**17.** $92$

**18.** $\dfrac{1}{40}$

**19.** Does not exist

**20.** $8x + 4h - 6$

**21.** $y = x + 8$

**22.** $(0, 0),\ \left(\dfrac{4}{3}, \dfrac{-32}{27}\right)$

**23.** $85x^{84}$

**24.** $\dfrac{3}{2} x^{-3/4} - x^{-1/2}$

**25.** $\dfrac{-12}{x^5}$

**26.** $\dfrac{3}{5} x^{-2/5}$

**27.** $16.4x^3 - 10x$

**28.** $3x^3 + 16x - 161$

**29.** $\dfrac{-4(2x^2 + 1)}{x^5}$

**30.** $2(x+2)^3 (3-x)(4-3x)$

**31.** $-16x(3x-1)(4x^3 - 2x^2 + 5)^{-5}$

**CHAPTER 1, FORM F (continued)**

**32.** $\dfrac{7x^4 - 20x}{2\sqrt{x^3 - 5}}$

**33.** $480x^3$

**34. (a)** $A_R = 30, \ A_C = x^{-1/3} + \dfrac{400}{x}$

$A_P = 30 - x^{-1/3} - \dfrac{400}{x}$

**(b)** Average cost is dropping at approximately \$2.79 per item.

**35. (a)** $\dfrac{dT}{dt} = 0.34t - 1.5$

**(b)** 99.53°F

**(c)** $-0.48$°F/hr

**36.** $(f \circ g)(x) = \sqrt{x^2 + 3x}$

$(g \circ f)(x) = x + 3\sqrt{x}$

**37.** $\dfrac{-(11x + 28)}{6(8 - 2x)^{1/4}(4 + x)^{5/6}}$

**38.** 3

**39.** $(-1.1246, \ 9.3334), (0.6508, \ -2.6279)$



**40.** 0