Lesson 1

p.12

6. $x=-3$

32. $y=-\frac{4}{3}x-\frac{1}{3}$ or $4x+3y+1=0$

p.28

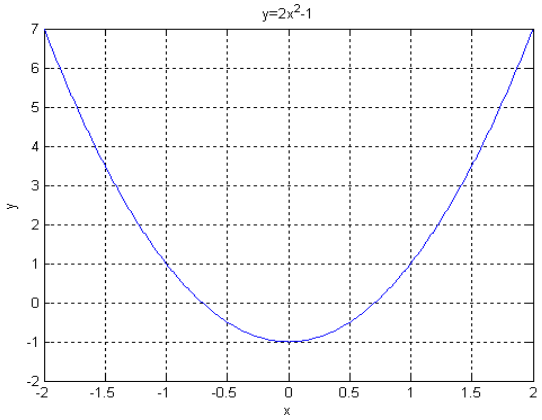
6. $(x-2)^2+(y+3)^2=2$

16. $(x-4)^2+(y+3)^2=5$, Center: $(4,-3)$, radius: $\sqrt{5}$

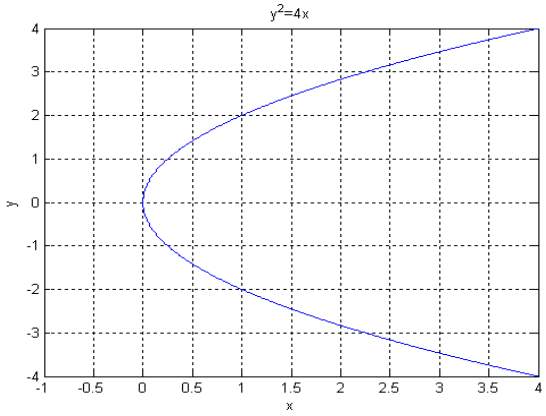
Lesson 2

p.21

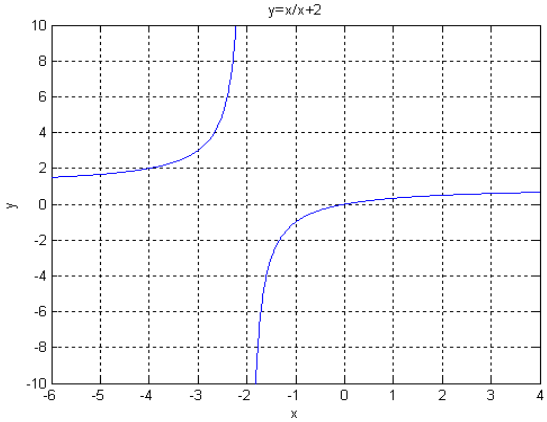
6.



10.



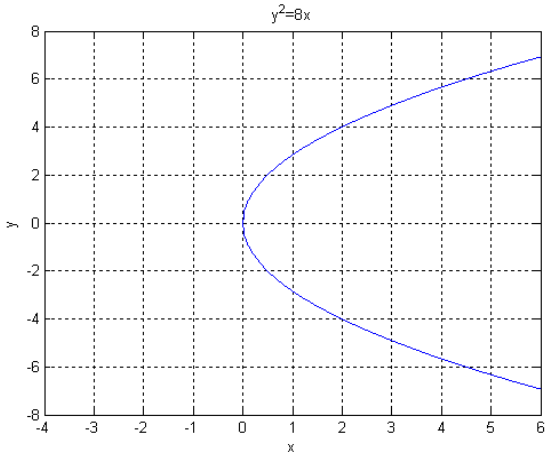
24.



Lesson 3

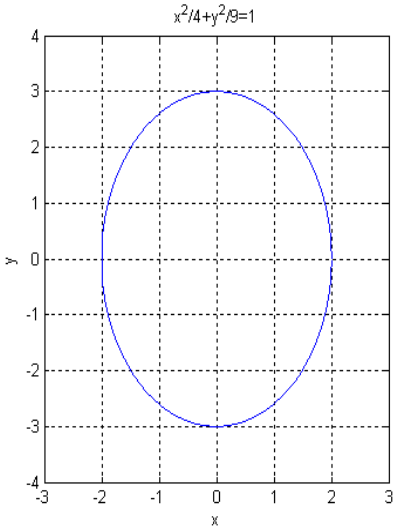
p.33

20. focus: $(2,0)$, directrix: $x=-2$

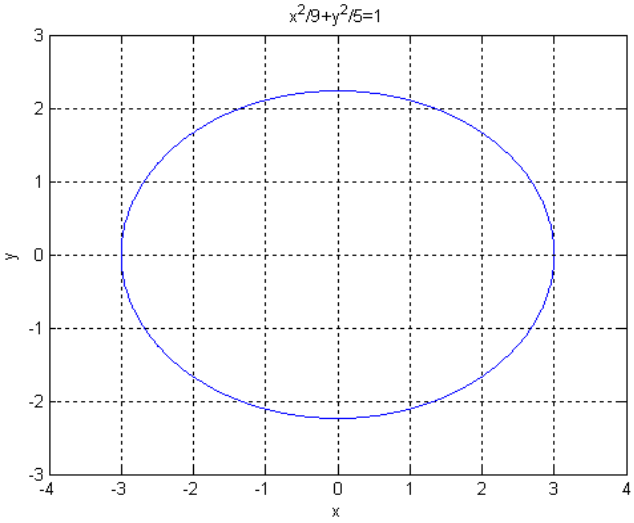


p.39

4.



10.



22. $\frac{x^2}{4}+\frac{y^2}{3}=1$

28. $\frac{x^2}{49}+\frac{4y^2}{25}=1$

Lesson 4

p.58

6. $C = 10,000 + 20x$

8. $y = 20 - x$

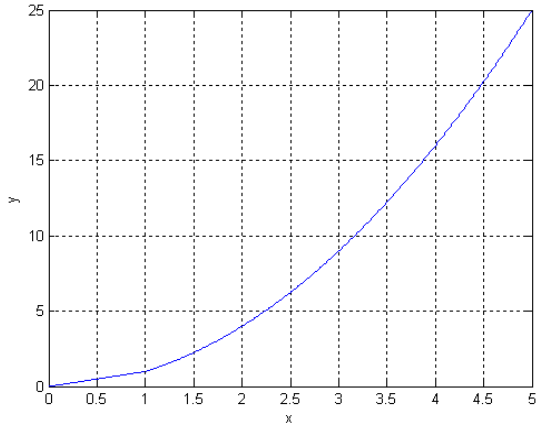
14. $D: (-\infty, \infty)$, $R: [2, \infty)$

30. $g(0) = 1$, $g(2) = -5$

32. $F(1) = -2$, $F(-2) = 16$

42. *a.* $\frac{1}{x^3}$, *b.* $\frac{1}{x^3}$, *c.* x

44. $f(0) = 0$, $f(1) = 1$, $f(3) = 9$



Lesson 5

p.65

2. 0

4. 2.72

16. 8

18. 1

24. 3/4

34. 5

36. 1/2

38. 2/3

40. 0

Lesson 6

p.74

2. -5

4. $-2x$

8. $-12x^2$

18. $\dfrac{1}{2\sqrt{x-2}}$

Lesson 7

p.78

6. $8x-1$

14. $x^3+\dfrac{2}{3}x$

p.81

2. $v=-6t,\ a=-6,\ t=0$

24. 16 ft/s

Lesson 8

p.88 (Group A)

2. $-16x^{-5}+8x^{-3}$

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

6. $\dfrac{3}{2}\sqrt{x}$

10. $-\dfrac{4}{x^3}+\dfrac{3}{x^4}$

12. $3(2x-3)\left(x^2-3x+2\right)^2$

14. $20x^3\left(4+x^4\right)^4$

18. $\dfrac{x}{\left(1-x^2\right)^{3/2}}$

Lesson 9

p.88 (Group A)

26. $9x^2(2x-1)(x-1)^2$

34. $-\dfrac{8s}{\left(s^2-4\right)^2}$

p.88 (Group B)

2. $\dfrac{x}{\sqrt{x^2+2}}$

18. $-\dfrac{3x+4}{2x^3\sqrt{x+1}}$

28. $\dfrac{2x^3-40x^2-24}{3\left(x^2+1\right)^{2/3}(x-8)^2}$

Lesson 10

p.96

2. $\dfrac{3}{4x^{5/2}}$

4. $30x^4-48x^2+8$

8. $-\dfrac{1}{\left(x^2-1\right)^{3/2}}$

p.97

36. $\dfrac{3}{8}(x+3)^{-5/2}$

Lesson 13

p.213

2. $-1/2$

10. $-\sqrt{2}$

12. 0

22. $-\frac{\sqrt{2}}{2}$

Lesson 14

p.213

54. 0

56. $\sin\theta$

64. $\sin^2 3x$

88. $\frac{1}{2}\sin 8x$

Lesson 15

p.218

2. $6\cos 3x$

6. $-2x\sin x^2$

22. $2x\sin 4x + 4x^2\cos 4x$

34. $\sin 2x$

38. $2x\cos^2 x\cos x^2 - \sin 2x\sin x^2$

48. $-0.169A$

Lesson 16

p.222

2. $12\sec^2 4x$

18. $3\sec^3 x \tan x$

20. $-\dfrac{\csc^2 x}{3\cot^{2/3} x}$

24. $\dfrac{3}{4}\sqrt[4]{\sec 3\theta}\tan 3\theta$

Lesson 17

p.103

4. increasing on $(-1,0)\cup(1,\infty)$, decreasing on $(-\infty,-1)\cup(0,1)$

6. relative minimum: $(2,-1)$

12. relative minimum: $(1,5)$, relative maximum: $(-1,9)$

18. absolute minimum: $(0,0)$

Lesson 18

p.110

4. concave up on $(-\infty,1)$, concave down on $(1,\infty)$

6. concave up on $(-2,0)$, concave down on $(-\infty,-2)\cup(0,\infty)$

8. concave up on $(-\infty,-2)$, concave down on $(-2,\infty)$

10. Relative minimum: $(1,0)$, concave up on $(-\infty,\infty)$, no inflection point

18. Relative Maximum: $(-2,22)$, Relative minimum: $(1,-5)$
concave up on $\left(-\dfrac{1}{2},\infty\right)$, concave down on $\left(-\infty,-\dfrac{1}{2}\right)$, inflection point: $\left(-\dfrac{1}{2},\dfrac{17}{2}\right)$

20. Relative Maximum: $(1,6)$, Relative minimum: $(-3,-26)$
concave up on $(-\infty,-1)$, concave down on $(-1,\infty)$, inflection point: $(-1,-10)$

24. No relative maximum nor minimum
concave up on $(0,\infty)$, concave down on $(-\infty,0)$, no inflection point

Lesson 19

p.110

30. Relative Maximum: $(-1,-2)$, Relative minimum: $(1,2)$
concave up on $(0,\infty)$, concave down on $(-\infty,0)$, no inflection point

Lesson 20

p.118

2. 0.302 A
14. $x=150\ m,\ y=100\ m$
16. $20\,ft\times 60\,ft$

Lesson 21

p.119

22. 3.17 in × 3 .17 in × 3.17 in
24. 21.995 cm for circle, 28.005 cm for square
28. 2 ft × 2 ft × 3 ft
34. 45 new wells

Lesson 24

p.127

2. 6
12. $100\pi\ cm^3/s$
16. $0.5\pi\ cm^2/\min$ (Hint: $1cm=10mm$)

Lesson 25

p.127

20. $\frac{2\sqrt{7}}{3}$ m/s

Lesson 26

p.131

2. $dy = \left(2x + \frac{1}{x^2}\right)dx$

6. −0.0135, −0.0148

8. 0.4 in^2, 1.6%

16. 0.6048 Ω

Lesson 27

p.135

2. $F(x) = x^2 + C$

6. $F(x) = \frac{2}{5}x^5 - 2x^3 + \frac{1}{2}x^2 + 5x + C$

8. $F(x) = \frac{1}{2}x^2 - \frac{7}{5}x^5 + C$

12. $F(x) = -\frac{2}{\sqrt{x}} + C$

Lesson 28

p.143

2. 15/2

4. 26/3

6. 1/6

8. 1

Lesson 29

p.149

2. $\frac{2}{5}x^{5/2} - \frac{1}{2}x^2 + C$

4. $3x^{1/3} + 2x^{3/2} + C$

12. $-\frac{1}{9}\left(4 - x^3\right)^3 + C$

14. $\frac{1}{16}\left(x^4 + 1\right)^4 + C$

20. $-\frac{1}{3}\left(1 - 2t\right)^{3/2} + C$

22. $\frac{3}{8}\left(t^2 + 1\right)^{4/3} + C$

24. $2\sqrt{x^2 - x} + C$

28. $x - \frac{2}{3}x^3 + \frac{1}{5}x^5 + C$

30. $2\sqrt{x} + x + C$

Lesson 30

p.149

54. 2
56. 28/3
60. 10/3
62. 2
64. 1/3
66. 136/3
68. $16\sqrt{2}/3$

Lesson 31

p.155

10. 1/3
22. 1/6
30. 7/6

Lesson 32

p.163

2. $y = x^3 + 1$

4. $y = \frac{3}{4}x^4 - x - 11$

6. $y = \frac{1}{4}x^4 - 4x + 7$

10. 20 m
20. 3.61 s, 36.06 m/s

Lesson 33

p.174

4. $\frac{\sqrt{5}-1}{2}$

6. $\frac{\sqrt{21}}{7}$

12. 3.71A

Lesson 34

p.177

6. $\frac{1}{2}\pi a^2$

12. 8π

20. 24π

Lesson 37

p.183

8. π

12. π

14. $\frac{\pi}{2}$

16. $\frac{32\pi}{3}$

Lesson 38

p.193

6. $\bar{x} = \frac{2}{3},\ \bar{y} = \frac{1}{3}$

10. $\bar{x} = \frac{8}{3},\ \bar{y} = \frac{8}{3}$

16. $\bar{x} = \frac{8}{15},\ \bar{y} = \frac{16}{105}$

26. $\bar{x} = \frac{5}{2},\ \bar{y} = 5$

Lesson 39

p.205

2. (a) 18 ft-lb (b) 31.5 ft-lb

4. 48 ft-lb

8. 450 J

Lesson 40

p.205

10. $48w$ J

12. $18\pi w$ J

18. 32000 J

Lesson 41

p.206

30. $36w$ N

32. $10w$ N

34. $120w$ N

Lesson 42

p.206

38. $\frac{1}{3}w$ N

42. $21w$ N