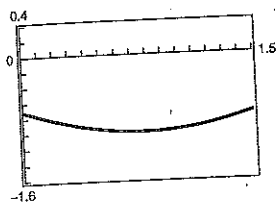


32.

x	0.2	0.4	0.6	0.8
y_1	-0.8335	-0.9266	-0.9829	-0.9999
y_2	-0.8335	-0.9266	-0.9829	-0.9999

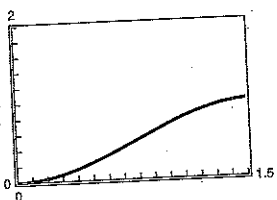
x	1.0	1.2	1.4
y_1	-0.9771	-0.9153	-0.8170
y_2	-0.9771	-0.9153	-0.8170



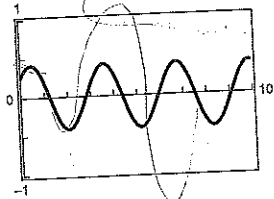
34.

x	0.2	0.4	0.6	0.8
y_1	0.1987	0.3894	0.5646	0.7174
y_2	0.1987	0.3894	0.5646	0.7174

x	1.0	1.2	1.4
y_1	0.8415	0.9320	0.9854
y_2	0.8415	0.9320	0.9854



36. $-\frac{16}{65}$ 38. $-\frac{63}{65}$ 40. $\frac{4}{5}$ 42. $-\frac{117}{125}$
 44.-50. Answers will vary. 52. $2x\sqrt{1-x^2}$
 54. $\frac{2x^2 + \sqrt{1-x^2}}{\sqrt{1+4x^2}}$ 56. $\frac{\pi}{3}, \frac{5\pi}{3}$ 58. $\frac{3\pi}{2}$ 60. $\frac{\pi}{6}, \frac{5\pi}{6}$
 62. 0.7854, 3.9270 64. 0, 1.0472, 3.1416, 5.2360
 66. (a)



(b) $y = \frac{5}{12} \sin(2t + 0.6435)$ (c) $\frac{5}{12}$ (d) $\frac{1}{\pi}$

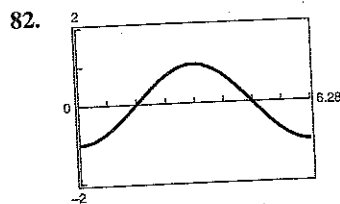
68. False. $\cos(u \pm v) = \cos u \cos v \mp \sin u \sin v$

70. True 72. and 74. Answers will vary.

76. (a) $5 \sin(2\theta + 0.9273)$ (b) $5 \cos(2\theta - 0.6435)$

78. (a) $\sqrt{2} \sin\left(2\theta - \frac{\pi}{4}\right)$ (b) $-\sqrt{2} \cos\left(2\theta + \frac{\pi}{4}\right)$

80. $-\frac{5\sqrt{2}}{2} \sin \theta + \frac{5\sqrt{2}}{2} \cos \theta$



$g(x) = -\cos x$

84. and 86. Answers will vary.

88. (0, -40), (-5, 0), (8, 0) 90. (-7, 0), (0, 0)

92. $-\frac{\pi}{3}$ 94. 0

Section 5.5 (page 418)

2. $\frac{3}{4}$ 4. $\frac{24}{25}$ 6. $\frac{25}{7}$ 8. $\frac{7}{24}$

10. $\frac{\pi}{2}, \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}$ 12. $\frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{3\pi}{2}, \frac{7\pi}{4}$

14. $\frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}$

16. $0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi, \frac{5\pi}{4}, \frac{3\pi}{2}, \frac{7\pi}{4}$ 18. $3 \sin 2x + 4$

20. $\cos 2x$

22. $\sin 2u = -\frac{12\sqrt{5}}{49}$ 24. $\sin 2u = -\frac{12}{37}$

$\cos 2u = -\frac{41}{49}$ $\cos 2u = \frac{35}{37}$

$\tan 2u = \frac{12\sqrt{5}}{41}$ $\tan 2u = -\frac{12}{35}$

26. $\frac{1}{8}(3 - 4 \cos 2x + \cos 4x)$

28. $\frac{1}{32}(10 + 15 \cos 2x + 6 \cos 4x + \cos 6x)$

30. $\frac{1}{32}(2 - \cos 2x - 2 \cos 4x + \cos 6x)$

32. $\frac{\sqrt{26}}{26}$ 34. $\frac{\sqrt{26}}{5}$ 36. 5 38. $\frac{\sqrt{26}}{13}$

40. $\sin 165^\circ = \frac{\sqrt{2-\sqrt{3}}}{2}$

$\cos 165^\circ = -\frac{\sqrt{2+\sqrt{3}}}{2}$

$\tan 165^\circ = -2 + \sqrt{3}$

42. $\sin 157^\circ 30' = \frac{\sqrt{2-\sqrt{2}}}{2}$

$\cos 157^\circ 30' = -\frac{\sqrt{2+\sqrt{2}}}{2}$

$\tan 157^\circ 30' = 1 - \sqrt{2}$

44. $\sin \frac{\pi}{12} = \frac{\sqrt{2-\sqrt{3}}}{2}$

$\cos \frac{\pi}{12} = \frac{\sqrt{2+\sqrt{3}}}{2}$

$\tan \frac{\pi}{12} = 2 - \sqrt{3}$

48. $\sin \frac{u}{2} = \frac{3}{5}$

$\cos \frac{u}{2} = \frac{4}{5}$

$\tan \frac{u}{2} = \frac{3}{4}$

46. $\sin \frac{7\pi}{12} = \frac{\sqrt{2+\sqrt{3}}}{2}$

$\cos \frac{7\pi}{12} = -\frac{\sqrt{2-\sqrt{3}}}{2}$

$\tan \frac{7\pi}{12} = -2 - \sqrt{3}$

50. $\sin \frac{u}{2} = \frac{\sqrt{50+7\sqrt{50}}}{10}$

$\cos \frac{u}{2} = -\frac{\sqrt{50-7\sqrt{50}}}{10}$

$\tan \frac{u}{2} = -\sqrt{50} - 7$

52. $|\cos 2x|$ 54. $-\left|\sin \frac{x-1}{2}\right|$ 56. $0, \frac{\pi}{3}, \frac{5\pi}{3}$

58. $0, \frac{\pi}{2}, \frac{3\pi}{2}$ 60. $2\left(\sin \frac{7\pi}{6} - \sin \frac{\pi}{2}\right)$

62. $\frac{5}{2}(\cos \alpha - \cos 7\alpha)$ 64. $\frac{1}{2}(\cos 2\theta + \cos 6\theta)$

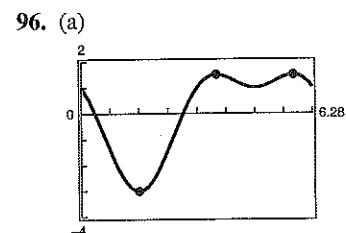
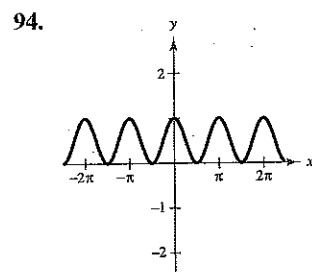
66. $2 \cos 75^\circ \cos 45^\circ$ 68. $2 \sin 4x \cos 3x$

70. $2 \cos(\phi + \pi) \cos \pi = -2 \cos(\phi + \pi)$

72. $2 \sin x \cos \frac{\pi}{2} = 0$ 74. $0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi, \frac{5\pi}{4}, \frac{3\pi}{2}, \frac{7\pi}{4}$

76. $0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi, \frac{5\pi}{4}, \frac{3\pi}{2}, \frac{7\pi}{4}$ 78. $\frac{144}{169}$

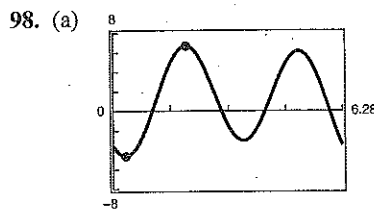
80. $\frac{36}{65}$ 82.-92. Answers will vary.



Minimum: $\left(\frac{\pi}{2}, -3\right)$

Maxima: $\left(\frac{7\pi}{6}, 3\right), \left(\frac{11\pi}{6}, 3\right)$

(b) $\frac{\pi}{2}, \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}$



Minimum: (0.3434, -4.6340)

Maximum: (1.9907, 6.6705)

(b) 0.3434, 1.9907, 3.5443, 5.0640

100. $2x^2 - 1$ 102. $\frac{2x}{x^2 + 1}$

104. (a) Area = $100 \sin \frac{\theta}{2} \cos \frac{\theta}{2}$

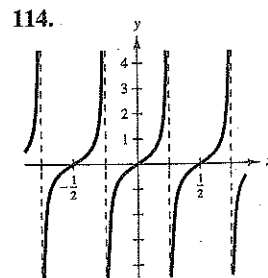
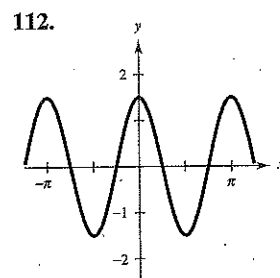
(b) Area = $50 \sin \theta$

The area is maximum when $\theta = \pi/2$; Area = 50.

106. $x = 2r(1 - \cos \theta)$ 108. True

110. (a) Complement: 35° ; Supplement: 125°

(b) Complement: none; Supplement: 18°



Review Exercises (page 422)

2. $\csc x$ 4. $\cot x$ 6. $\sec x$ 8. $\tan x$

10. $-\tan x$

12. $\sin \theta = \frac{3\sqrt{13}}{13}$

$\cos \theta = \frac{2\sqrt{13}}{13}$

$\csc \theta = \frac{\sqrt{13}}{3}$

$\cot \theta = \frac{2}{3}$

14. $\cos \theta = \frac{1}{3}$

$\tan \theta = 2\sqrt{2}$

$\csc \theta = \frac{3\sqrt{2}}{4}$

$\sec \theta = 3$

$\cot \theta = \frac{\sqrt{2}}{4}$

16. $\frac{1}{\cos x} + 1$ 18. $1 - \sin \beta \cos \beta$ 20. 1

22. -

40. $\frac{3}{4}$

46. $\frac{\pi}{6}$

52. $\frac{\pi}{6}$

58. No

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

66. \sin

\cos

\tan

\tan

\tan

70. \cos

76. $\frac{12\sqrt{}}$

80.-84.

88.-92.

94. $\sin 2t$

$\cos 2t$

$\tan 2t$

96. $\frac{1}{32}(10$

98. $\frac{1}{8}(3 +$

100. $\sin 10$

$\cos 10$

$\tan 10$

$\tan 10$

102. $\sin \frac{7\pi}{8}$

$\cos \frac{7\pi}{8}$

$\tan \frac{7\pi}{8}$

$\tan \frac{7\pi}{8}$

104. $-\cos 5$

108. (a) $V =$

(b) $V =$

Volume i