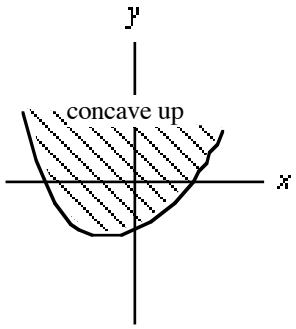
Chapter 4 Focus Exercise Answers

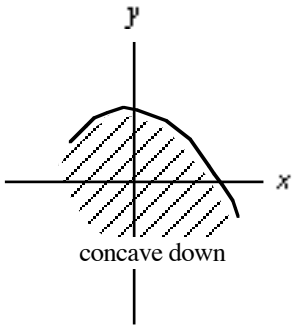
Sec. 4.1 Introduction to Graphing

1.



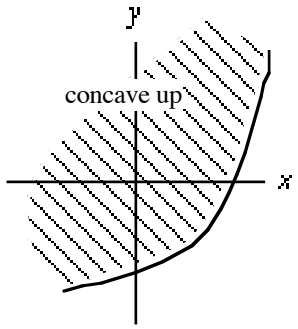
Both increasing and decreasing.

2.



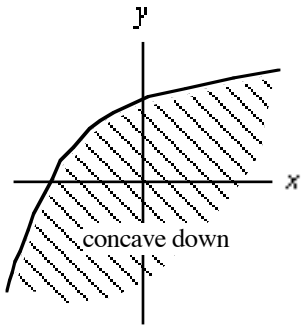
Both increasing and decreasing.

3.



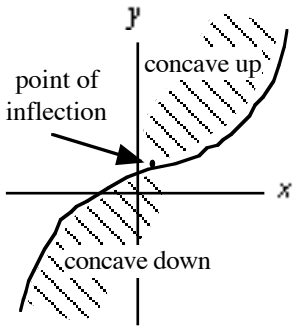
Increasing only.

4.



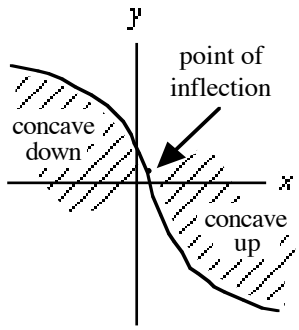
Increasing only.

5.



Increasing only.

6.



decreasing only.

7. a) Shifts up 6;
b) is narrower than the standard graph

8. a) Shifts down 5;
b) is wider than the standard graph

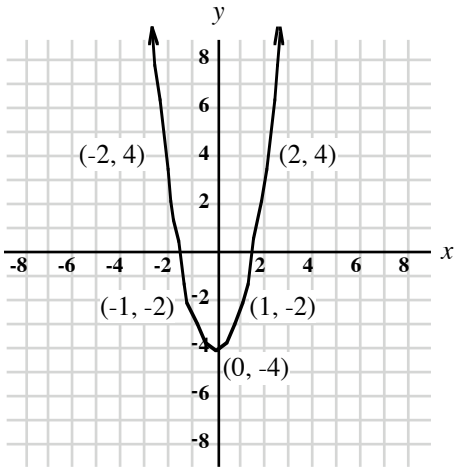
9. a) Shifts right 9;
b) is standard and reflected

10. a) Shifts left 4;
b) is narrower than the standard graph

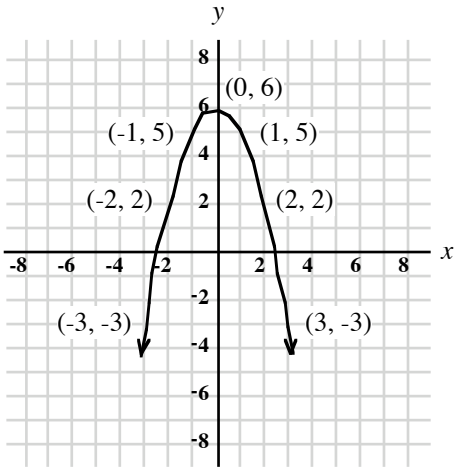
11. a) Shifts left 2 and down 1;
b) is standard

12. a) Shifts right 7 and up 3;
b) is standard and reflected

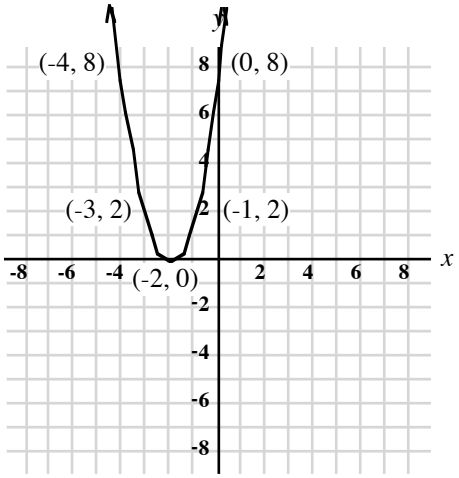
13. $f(x) = 2x^2 - 4$



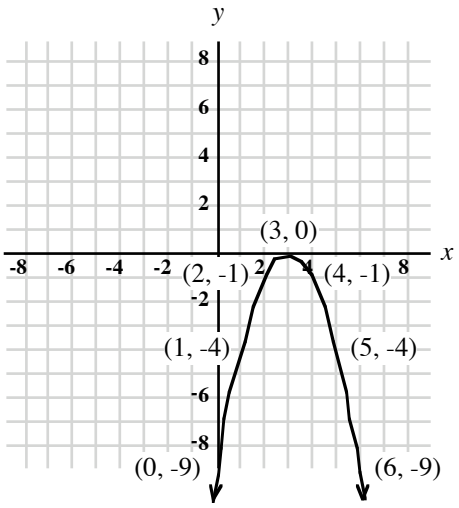
14. $f(x) = -x^2 + 6$



15. $f(x) = 2(x + 2)^2$

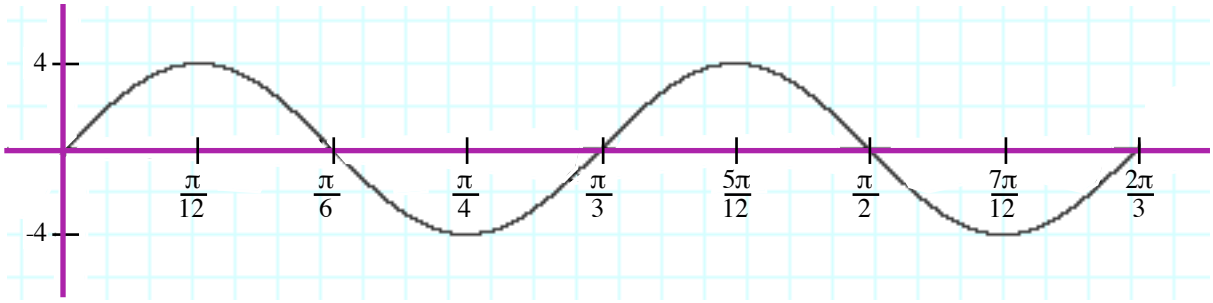


16. $f(x) = -(x - 3)^2$

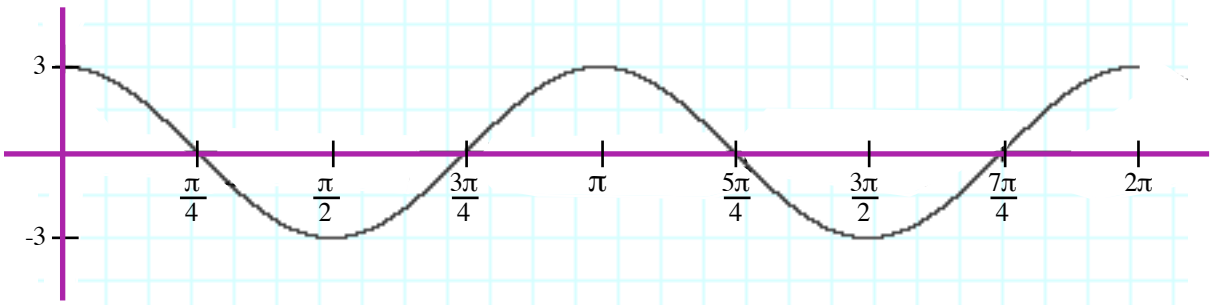


Section 4.2 Graphing the Sine and Cosine Functions

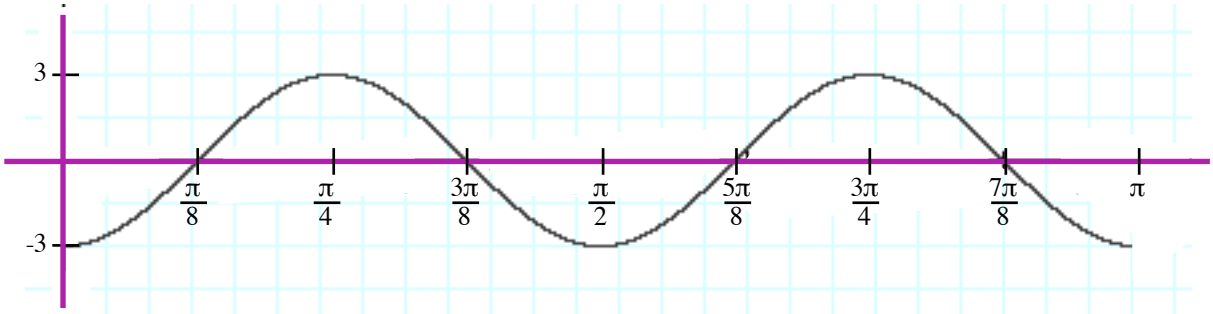
1. $f(x) = 4\sin(6x)$



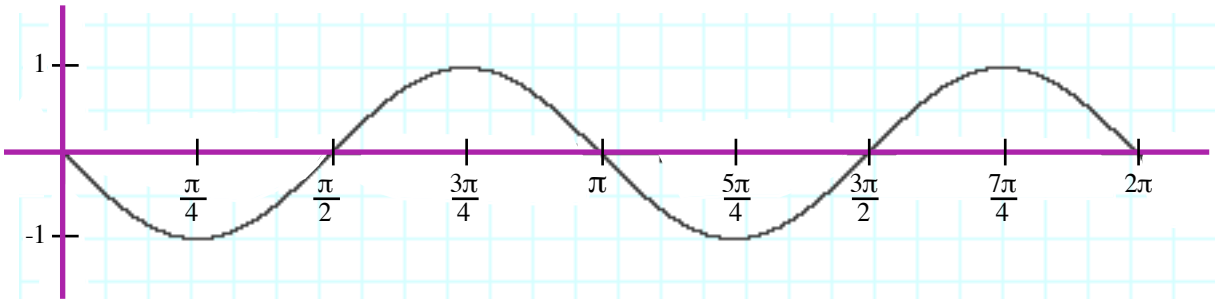
2. $f(x) = 3\cos(2x)$



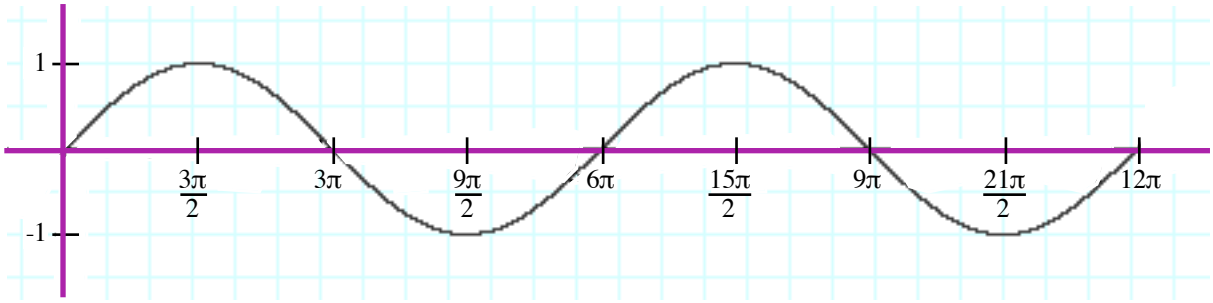
3. $f(x) = -3\cos(4x)$



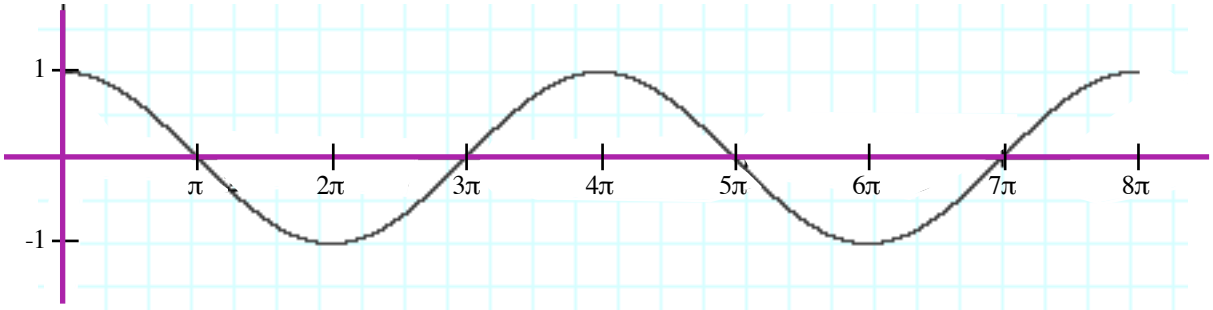
4. $f(x) = -\sin(2x)$



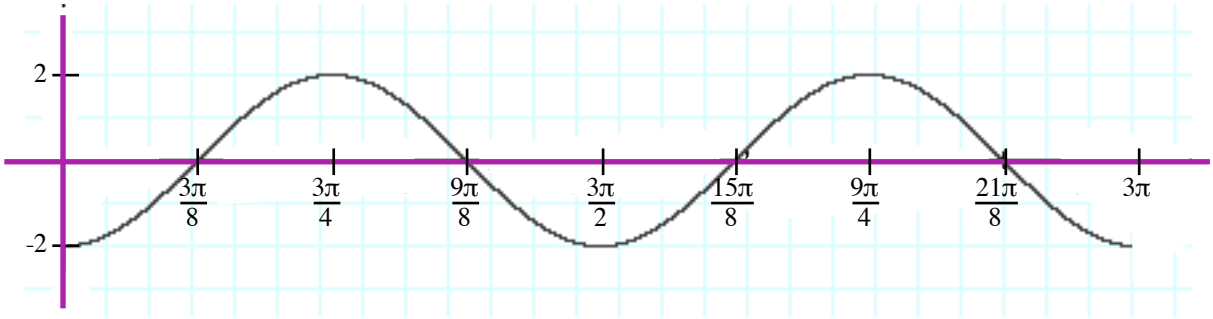
5. $f(x) = \sin\left(\frac{1}{3}x\right)$



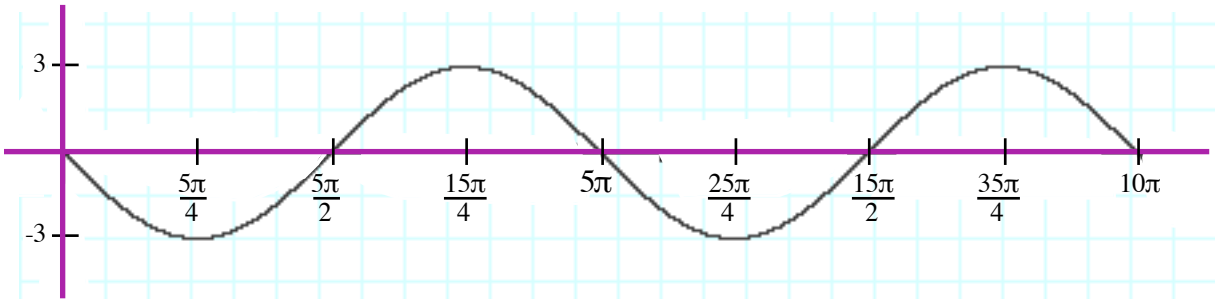
6. $f(x) = \cos\left(\frac{1}{2}x\right)$



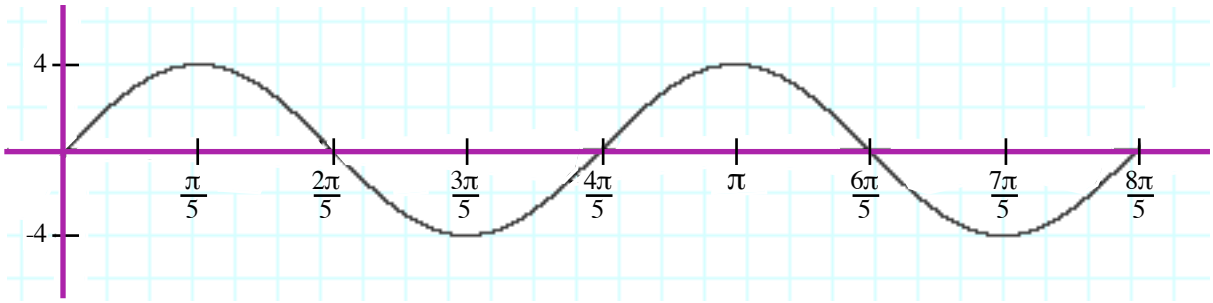
7. $f(x) = -2\cos\left(\frac{4}{3}x\right)$



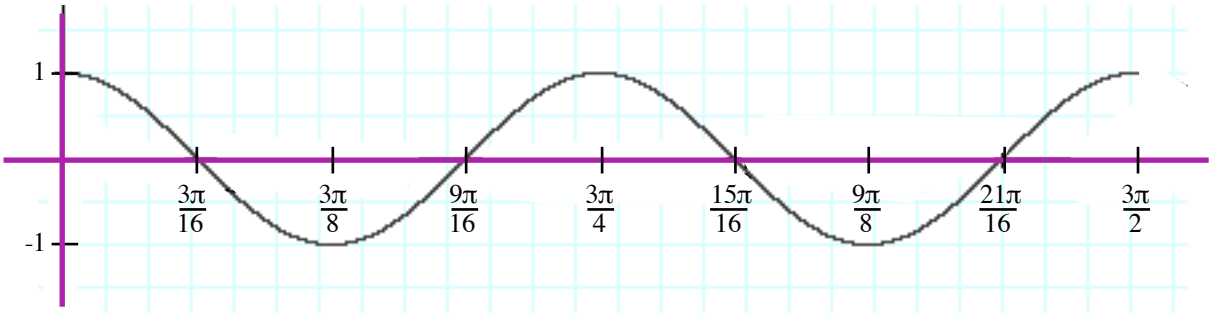
8. $f(x) = -3\sin\left(\frac{2}{5}x\right)$



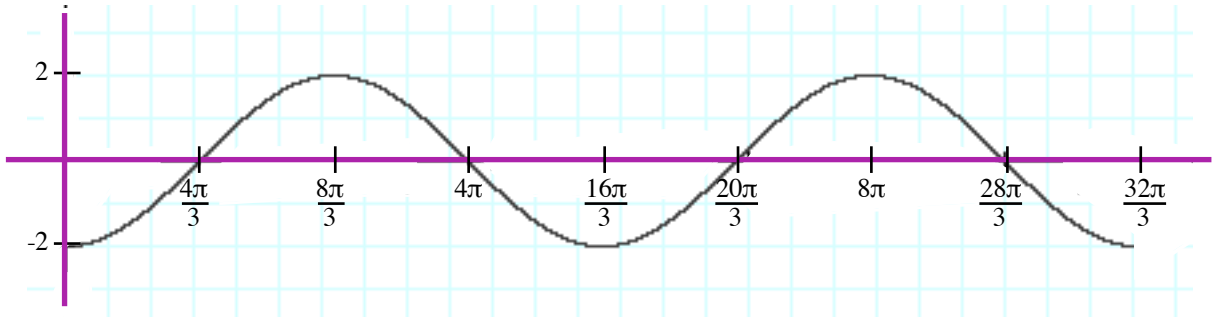
9. $f(x) = 4\sin\left(\frac{5}{2}x\right)$



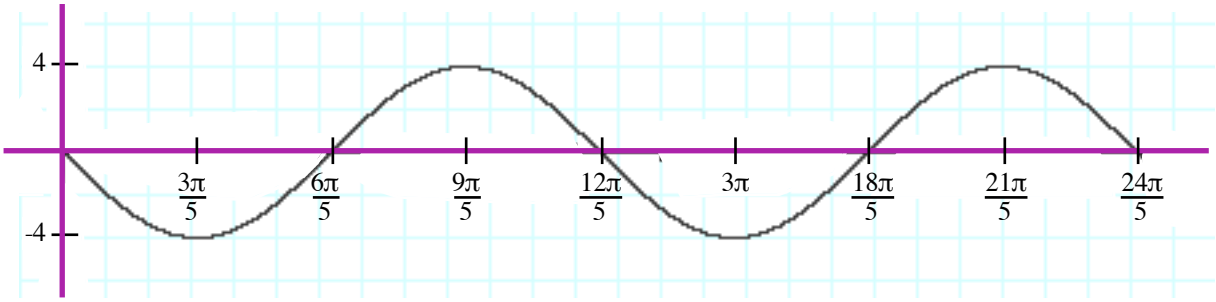
10. $f(x) = 3\cos\left(\frac{8}{3}x\right)$



11. $f(x) = -2\cos\left(\frac{3}{8}x\right)$



12. $f(x) = -4\sin\left(\frac{5}{6}x\right)$



Sec. 4.3 Find the Function (Note: The answers use $f(x)$ instead of y.)

1. $f(x) = 4\cos\left(\frac{1}{2}x\right)$

2. $f(x) = \sin(2x)$

3. $f(x) = 5\sin(3x)$

4. $f(x) = 2\cos\left(\frac{8}{3}x\right)$

5. $f(x) = -3\sin\left(\frac{16}{5}x\right)$

6. $f(x) = -\frac{5}{3}\cos(12x)$

7. $f(x) = 2\cos\left(\frac{4}{3}x\right)$

8. $f(x) = 5\sin\left(\frac{3}{4}x\right)$

9. $f(x) = -\frac{5}{2}\cos(4x)$

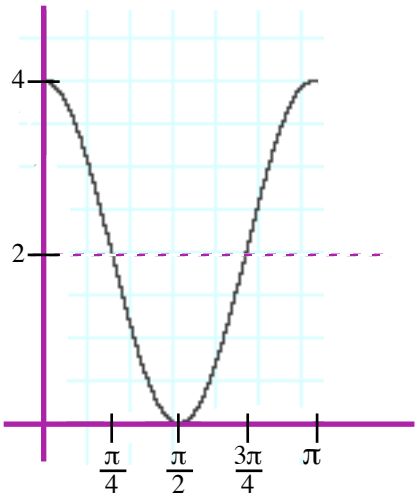
10. $f(x) = -3\sin(6x)$

11. $f(x) = \sin\left(\frac{8}{3}x\right)$

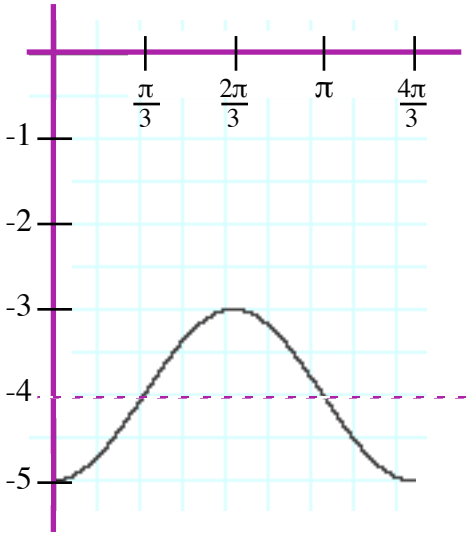
12. $f(x) = \cos\left(\frac{4}{5}x\right)$

Section 4.4 Graphing with Vertical and Horizontal Shifts

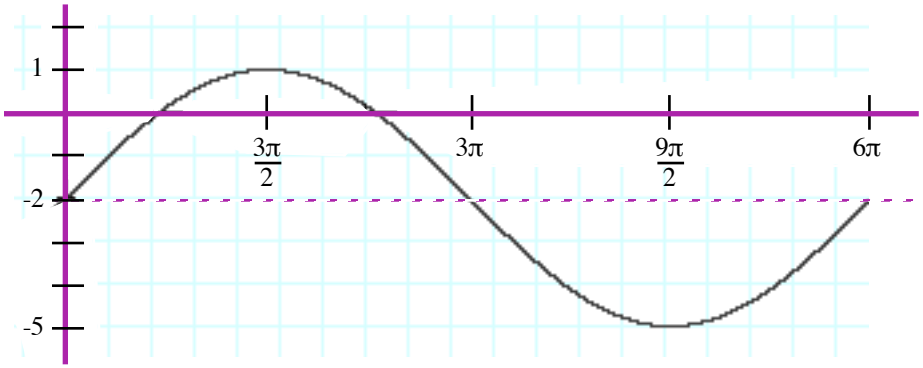
1. $f(x) = 2\cos(2x) + 2$



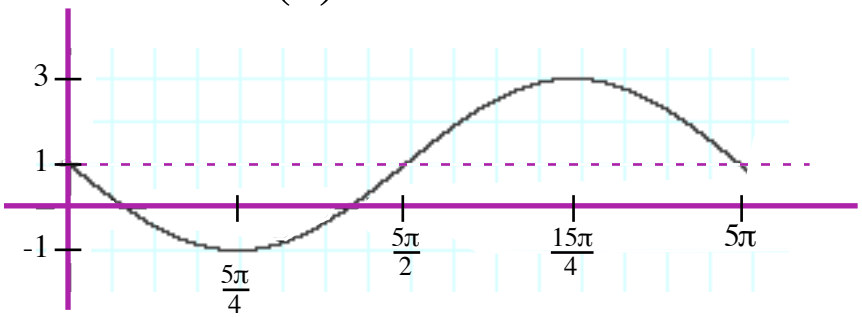
2. $f(x) = -\cos\left(\frac{3}{2}x\right) - 4$



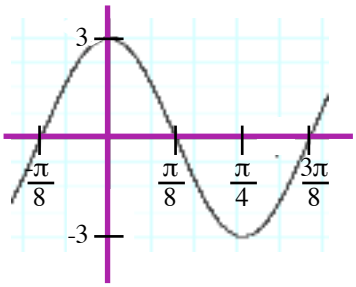
3. $f(x) = -2 + 3\sin\left(\frac{1}{3}x\right)$



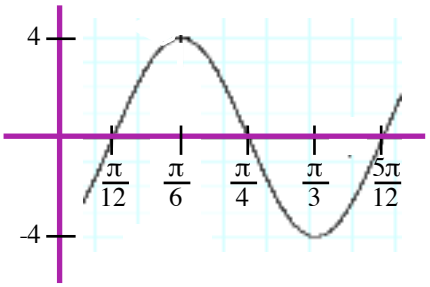
4. $f(x) = 1 - 2\sin\left(\frac{2}{5}x\right)$



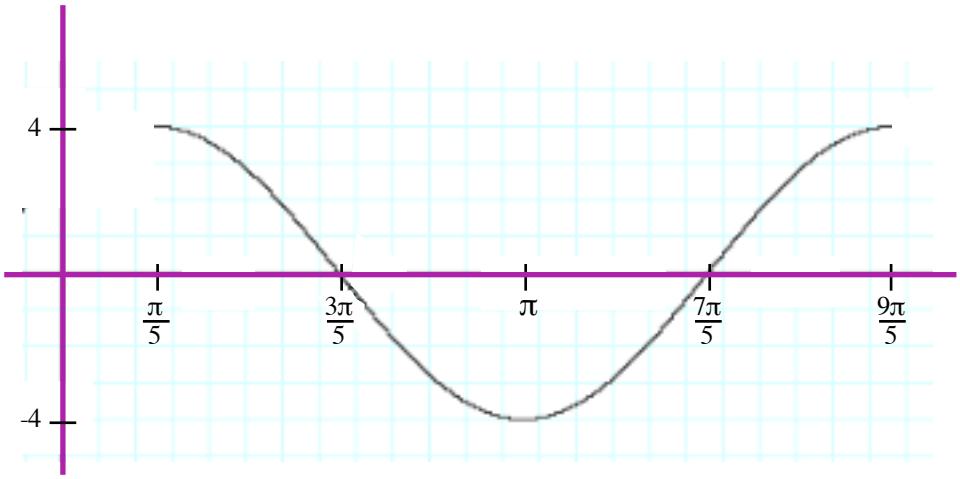
5. $f(x) = 3\sin\left(4x + \frac{\pi}{2}\right)$



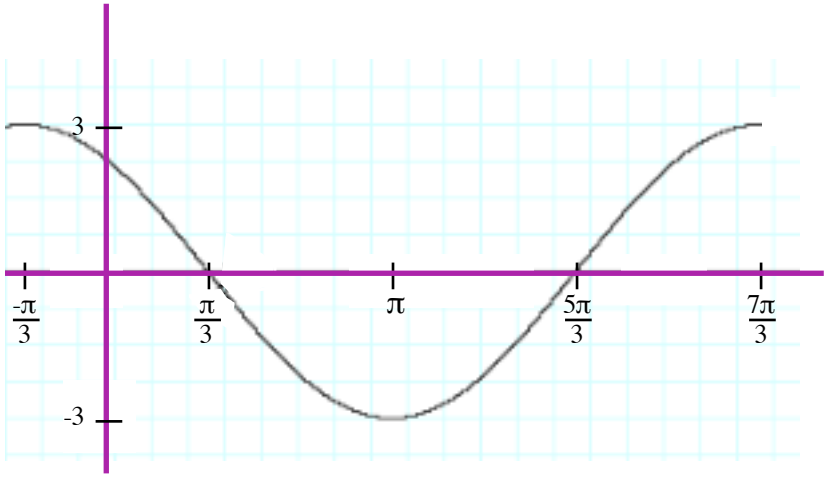
6. $f(x) = 4\sin\left(6x - \frac{\pi}{2}\right)$



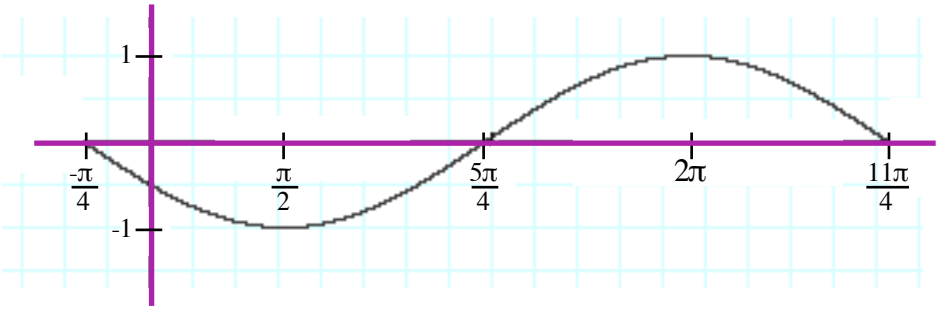
7. $f(x) = 4\cos\left(\frac{5}{4}x - \frac{\pi}{4}\right)$



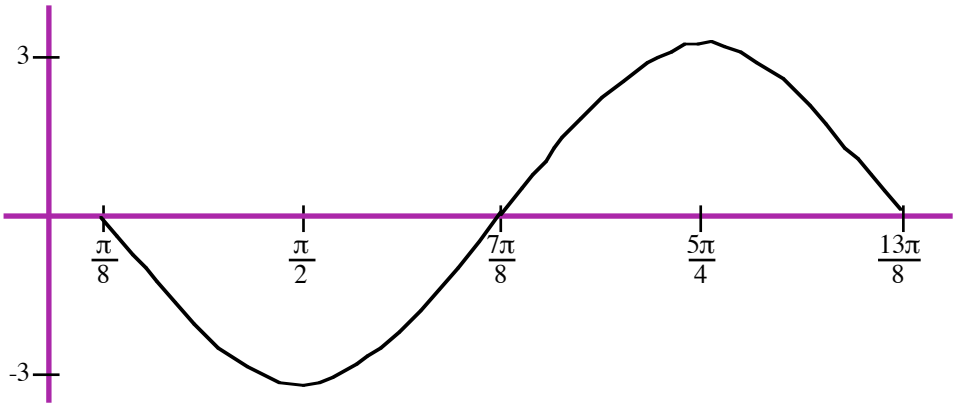
8. $f(x) = 4\cos\left(\frac{5}{4}x - \frac{\pi}{4}\right)$



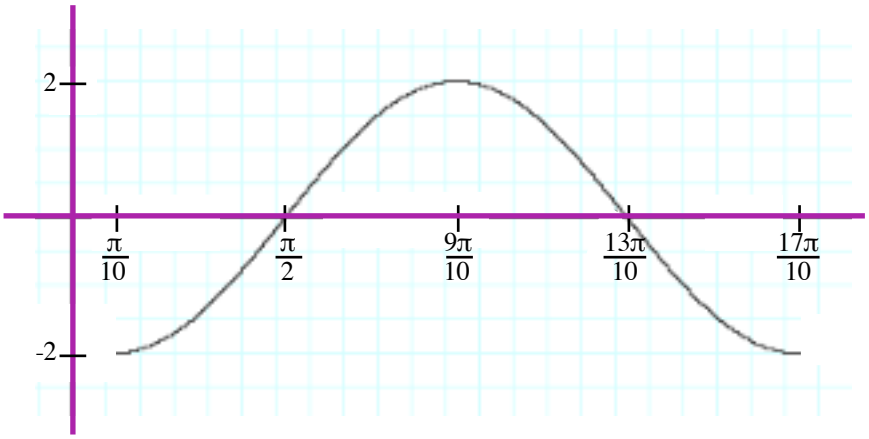
9. $f(x) = -\sin\left(\frac{2}{3}x + \frac{\pi}{6}\right)$



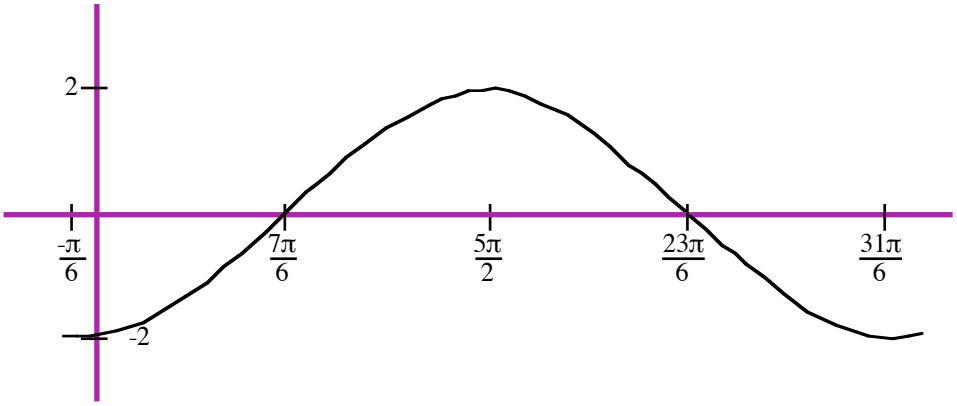
10. $f(x) = -3\sin\left(\frac{4}{3}x - \frac{\pi}{6}\right)$



11. $f(x) = -2\cos\left(\frac{5}{4}x - \frac{\pi}{8}\right)$



12. $f(x) = -2\cos\left(\frac{3}{8}x + \frac{\pi}{16}\right)$



Sec. 4.5 Find the Function

1. Period = π

2. B = 2

3. $f(x) = 3\cos\left(2x + \frac{\pi}{3}\right)$

4. $f(x) = -3\cos\left(2x - \frac{2\pi}{3}\right)$

5. $f(x) = -3\sin\left(2x - \frac{\pi}{6}\right)$

6. $f(x) = 3\sin\left(2x - \frac{7\pi}{6}\right)$

7. Period = 3π

8. B = $\frac{2}{3}$

9. $f(x) = -2\sin\left(\frac{2}{3}x - \frac{\pi}{9}\right)$

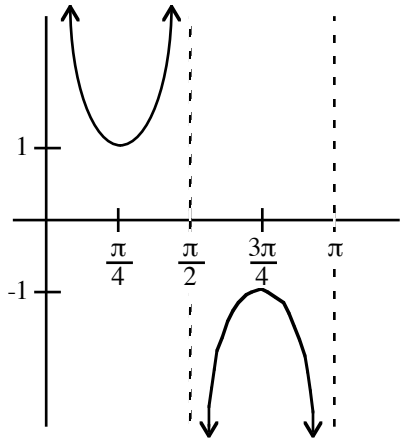
10. $f(x) = 2\sin\left(\frac{2}{3}x + \frac{8\pi}{9}\right)$

11. $f(x) = 2\cos\left(\frac{2}{3}x + \frac{7\pi}{18}\right)$

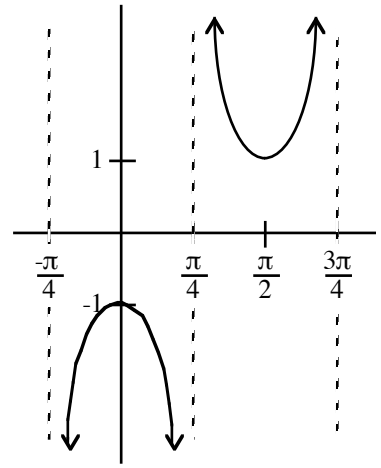
12. $f(x) = -2\cos\left(\frac{2}{3}x + \frac{25\pi}{18}\right)$

Section 4.6 Graphing Secant and Cosecant

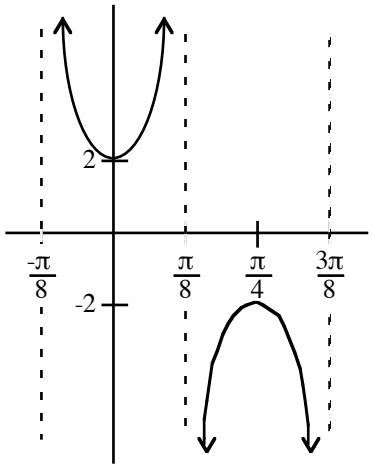
1. $f(x) = \csc(2x)$



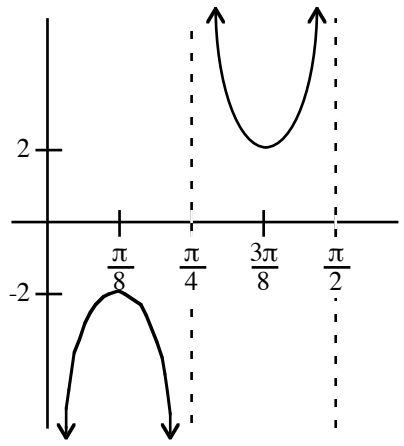
2. $f(x) = -\sec(2x)$



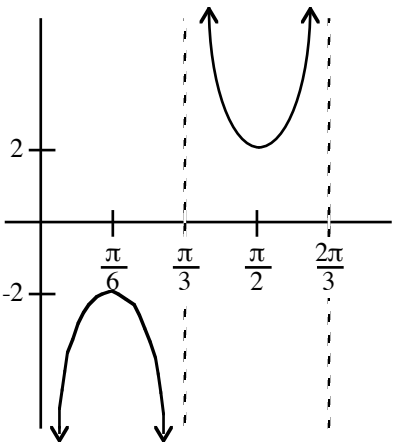
3. $f(x) = 2\sec(4x)$



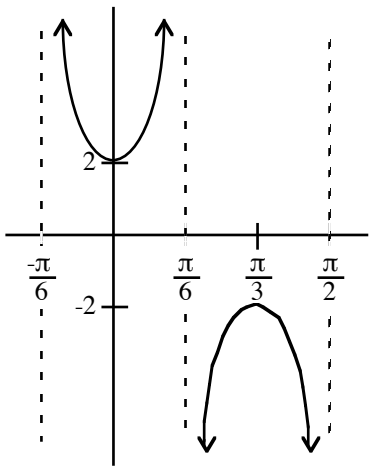
4. $f(x) = -2\csc(4x)$



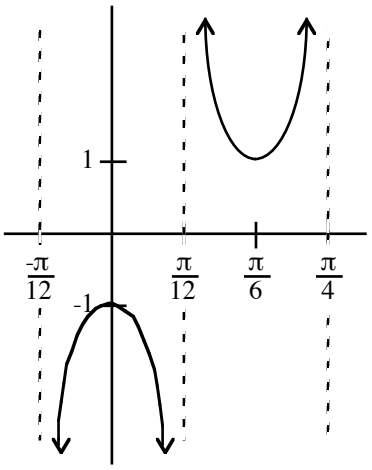
5. $f(x) = -2\csc(3x)$



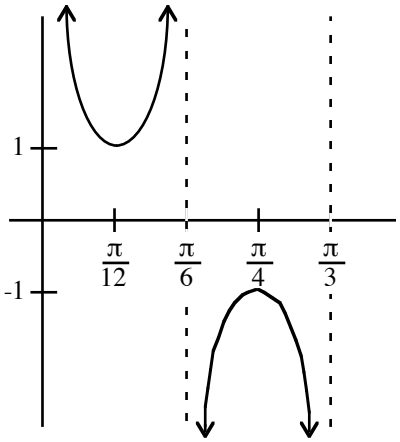
6. $f(x) = 2\sec(3x)$



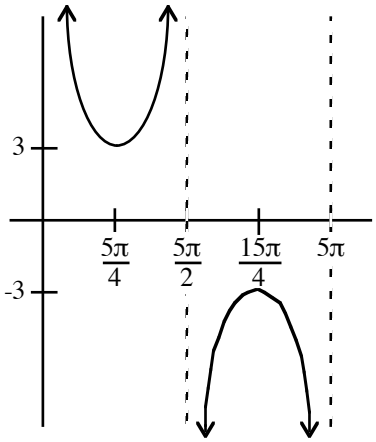
7. $f(x) = -\sec(6x)$



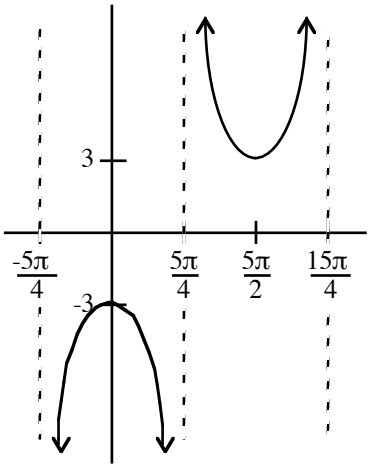
8. $f(x) = \csc(6x)$



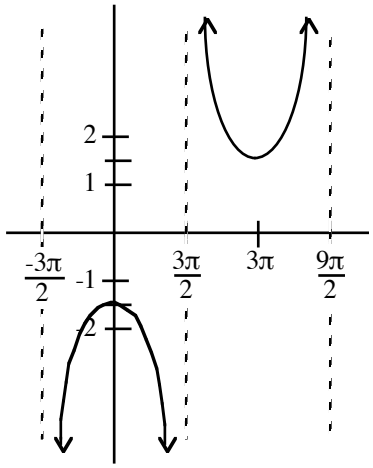
9. $f(x) = 3\csc\left(\frac{2}{5}x\right)$



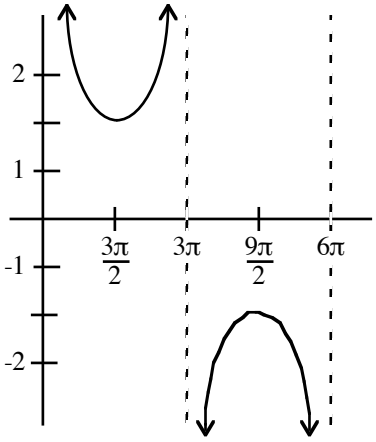
10. $f(x) = -3\sec\left(\frac{2}{5}x\right)$



11. $f(x) = -\frac{3}{2}\sec\left(\frac{1}{3}x\right)$

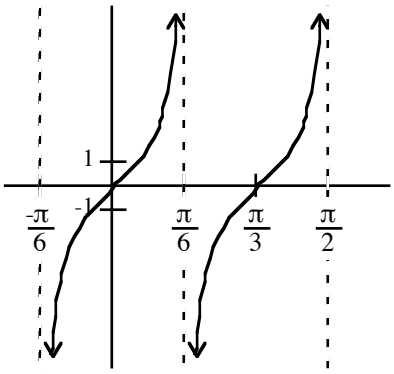


12. $f(x) = \frac{3}{2}\csc\left(\frac{1}{3}x\right)$

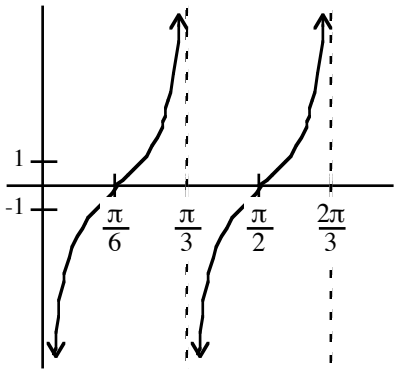


Section 4.7 Graphing Tangent and Cotangent

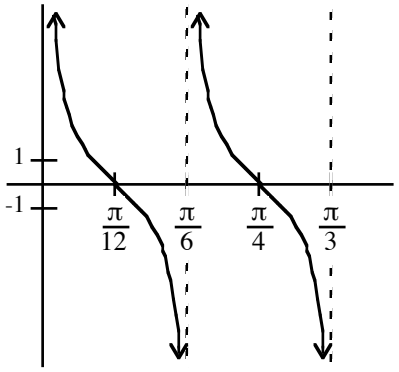
1. $f(x) = \tan(3x)$



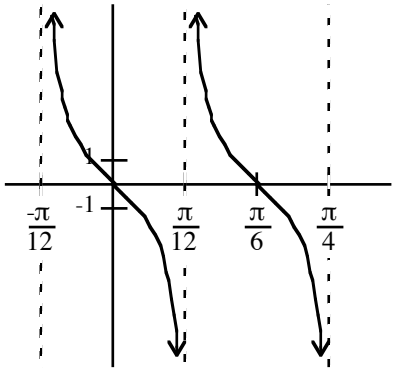
2. $f(x) = -\cot(3x)$



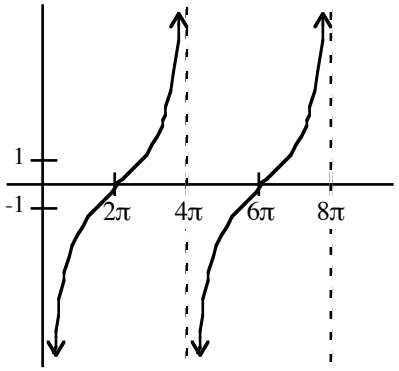
3. $f(x) = \cot(6x)$



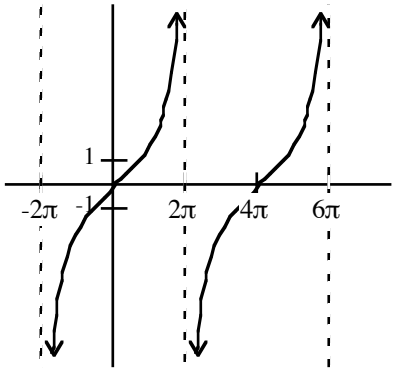
4. $f(x) = -\tan(6x)$



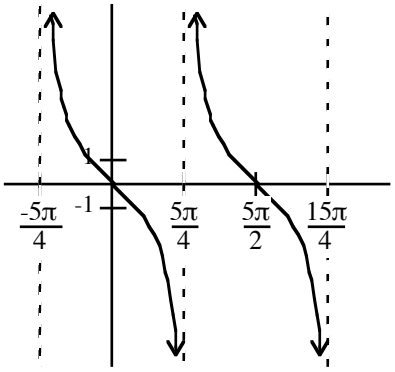
5. $f(x) = -\cot\left(\frac{1}{4}x\right)$



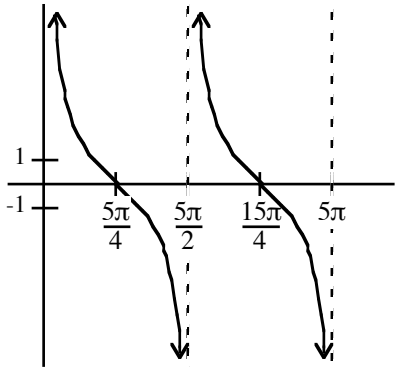
6. $f(x) = \tan\left(\frac{1}{4}x\right)$



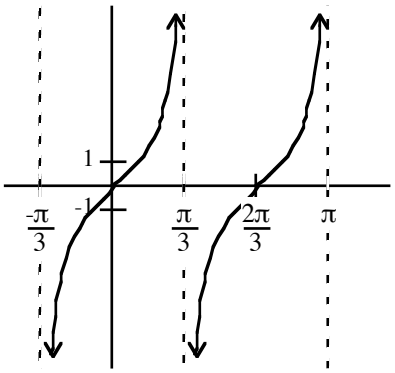
7. $f(x) = -\tan\left(\frac{2}{5}x\right)$



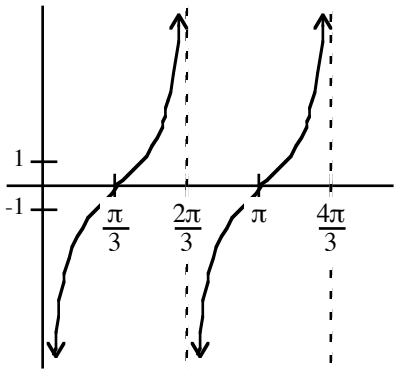
8. $f(x) = \cot\left(\frac{2}{5}x\right)$



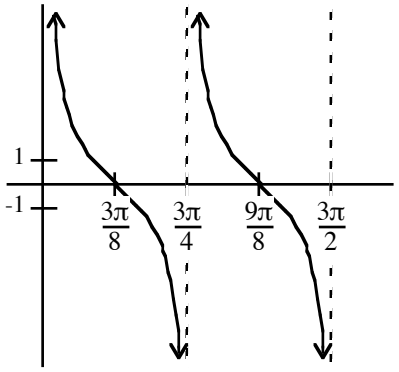
9. $f(x) = \tan\left(\frac{3}{2}x\right)$



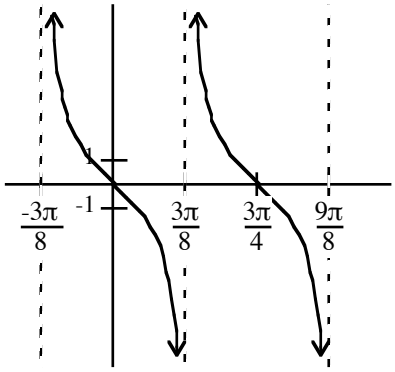
10. $f(x) = -\cot\left(\frac{3}{2}x\right)$



11. $f(x) = \cot\left(\frac{4}{3}x\right)$



12. $f(x) = -\tan\left(\frac{4}{3}x\right)$



Section 4.8 Inverse Trigonometric Functions

1. $\frac{\pi}{6}$	**2.** $\frac{3\pi}{4}$	**3.** $-\frac{\pi}{4}$	**4.** $\frac{\pi}{2}$
5. $\frac{\pi}{6}$	**6.** $-\frac{\pi}{6}$	**7.** 0	**8.** $\frac{\pi}{3}$
9. $-\frac{\pi}{6}$	**10.** 0	**11.** $-\frac{\pi}{3}$	**12.** $\frac{\pi}{3}$
13. $\frac{\pi}{4}$	**14.** $\frac{5\pi}{6}$	**15.** $\frac{\pi}{4}$	**16.** $-\frac{\pi}{4}$
17. $\frac{\pi}{6}$	**18.** $\frac{\pi}{4}$	**19.** π	**20.** $\frac{2\pi}{3}$
21. $-\frac{\pi}{3}$	**22.** $-\frac{\pi}{2}$	**23.** $\frac{\pi}{2}$	**24.** $\frac{\pi}{3}$
25. 0	**26.** $-\frac{\pi}{3}$	**27.** $-\frac{\pi}{6}$	**28.** $-\frac{\pi}{3}$
29. $\frac{\pi}{3}$	**30.** π	**31.** $\frac{5\pi}{6}$	**32.** $\frac{\pi}{2}$
33. $-\frac{\pi}{2}$	**34.** $-\frac{\pi}{4}$	**35.** 0	**36.** $\frac{\pi}{3}$