Graph each function showing at least two periods and labeling all key points on the x-axis in exact radians. Label all asymptotes as well.

1) $y = 2\sec\left(\dfrac{1}{2}x\right)$

2) $y = -2\tan(3x)$

3) $y = \cot(2x)$

4) $y = \csc\left(\dfrac{1}{2}x\right)$

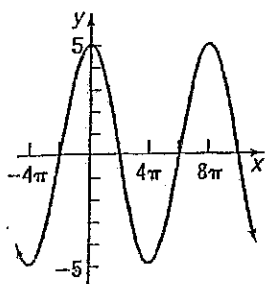5) $y = \tan(x - \pi)$

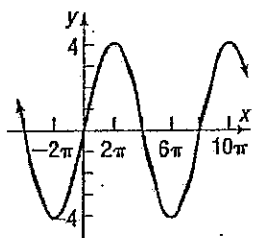6) $y = \cot(x - \pi)$

7) $y = -8\sin\left(\dfrac{\pi}{2}x\right)$

8) $y = -2\cos(3\pi x)$

In Problems 71–74, find a function whose graph is given.

71.

72.
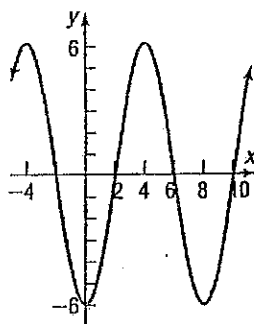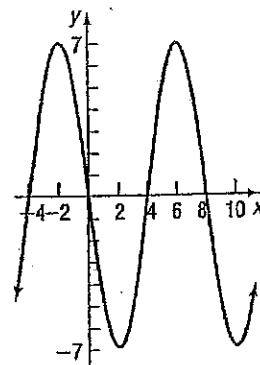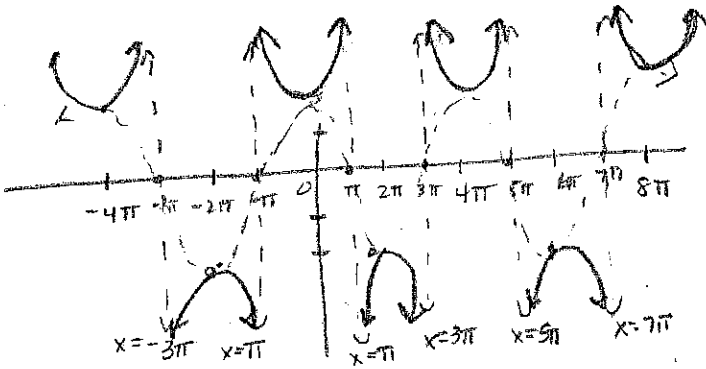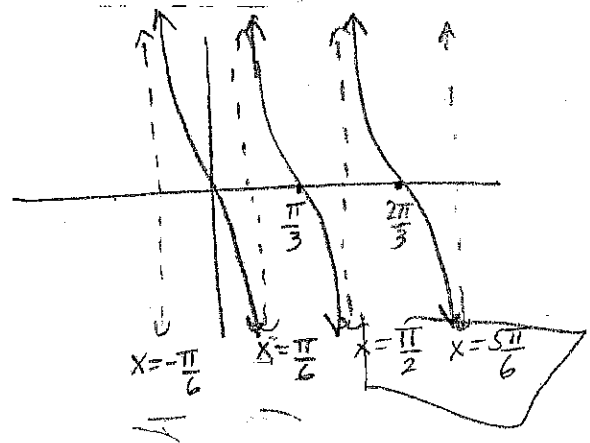

73.

74.

Graph each function showing at least two periods and labeling all key points on the x-axis in exact radians. Label all asymptotes as well.
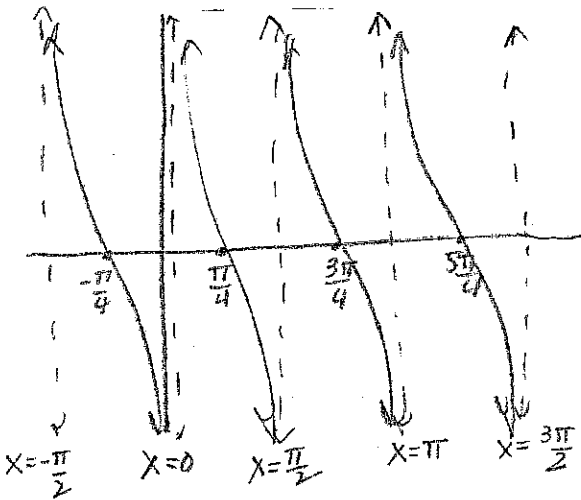
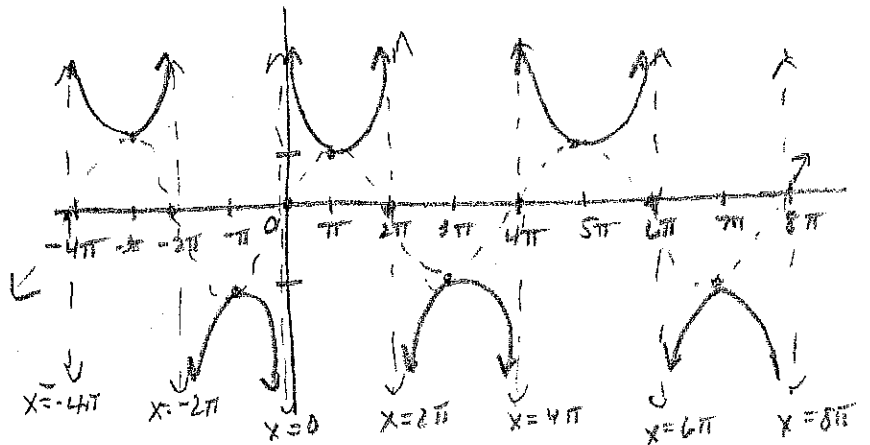1) $y = 2\sec\left(\frac{1}{2}x\right)$ $A = 2$ $P = \frac{2\pi}{1/2} = 4\pi$

$x = -3\pi$ $x = \pi$ $x = \pi$ $x = 3\pi$ $x = 5\pi$ $x = 7\pi$
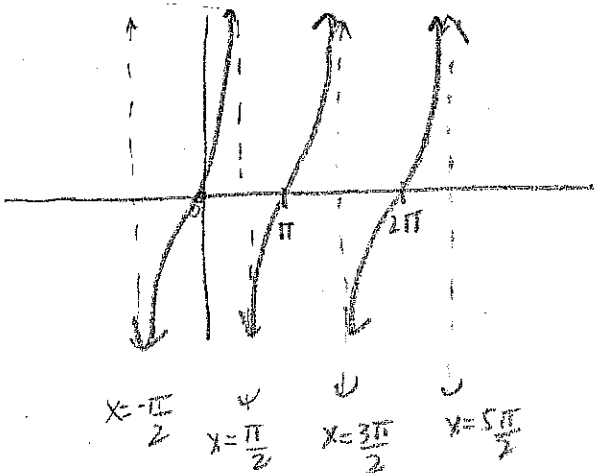
-4π -3π -2π $-\pi$ 0 π 2π 3π 4π 5π 6π 7π 8π

2) $y = -2\tan(3x)$ $P = \frac{\pi}{3}$

$\frac{\pi}{3}$ $\frac{2\pi}{3}$

$x = -\frac{\pi}{6}$ $x = \frac{\pi}{6}$ $x = \frac{\pi}{2}$ $x = \frac{5\pi}{6}$

3) $y = \cot(2x)$ $P = \frac{\pi}{2}$

$-\frac{\pi}{4}$ $\frac{\pi}{4}$ $\frac{3\pi}{4}$ $\frac{5\pi}{4}$

$x = -\frac{\pi}{2}$ $x = 0$ $x = \frac{\pi}{2}$ $x = \pi$ $x = \frac{3\pi}{2}$

4) $y = \csc\left(\frac{1}{2}x\right)$ $P = \frac{2\pi}{1/2} = 4\pi$

-4π -3π -2π $-\pi$ 0 π 2π 3π 4π 5π 6π 7π 8π

$x = -4\pi$ $x = -2\pi$ $x = 0$ $x = 2\pi$ $x = 4\pi$ $x = 6\pi$ $x = 8\pi$

5) $y = \tan(x - \pi)$ → shift π right   period = π

π 2π

$x = -\frac{\pi}{2}$ $x = \frac{\pi}{2}$ $x = \frac{3\pi}{2}$ $x = \frac{5\pi}{2}$

6) $y = \cot(x - \pi)$ → shift π right

0   $\frac{\pi}{2}$ π $\frac{3\pi}{2}$ $\frac{5\pi}{2}$

$x = 0$ $x = \pi$ $x = 2\pi$ $x = 3\pi$

Precalc Sec. 5.4-5.5

7) $y = -8\sin\left(\frac{\pi}{2}x\right)$

period: $\frac{2\pi}{1} \cdot \frac{2}{\pi} = 4$

$\frac{2\pi}{\frac{\pi}{2}} =$
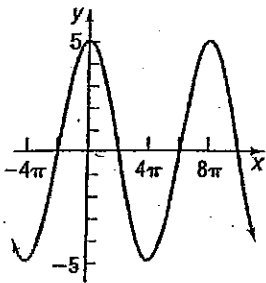
8) $y = -2\cos(3\pi x)$

period $= \frac{2\pi}{3\pi} = \frac{2}{3}$

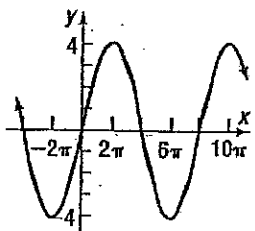*In Problems 71–74, find a function whose graph is given.*

71.

Period $= 8\pi$

$\frac{2\pi}{b} = \frac{8\pi}{1}$

$2\pi = 8\pi b$

$b = \frac{2\pi}{8\pi} = \frac{1}{4}$

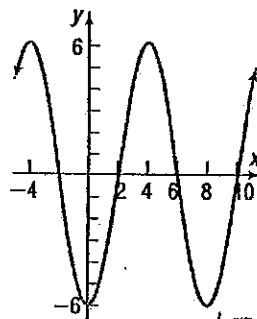$y = 5\cos\left(\frac{1}{4}x\right)$

72.

period $= 8\pi$

$\frac{2\pi}{b} = 8\pi$

$2\pi = 8\pi b$

$b = \frac{2\pi}{8\pi} = \frac{1}{4}$

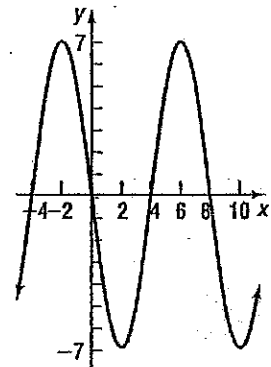$y = 4\sin\left(\frac{1}{4}x\right)$

73.

period $= 8$

$\frac{2\pi}{b} = 8$

$2\pi = 8b$

$b = \frac{2\pi}{8} = \frac{\pi}{4}$

$y = -6\cos\left(\frac{\pi}{4}x\right)$

74.

period $=$

$\frac{2\pi}{b} = 8$

$2\pi = 8b$

$b = \frac{2\pi}{8} = \frac{\pi}{4}$

$y = -7\sin\left(\frac{\pi}{4}x\right)$