Algebra 2/Trig H Review: ch 14 trig graphs, 14.4, 14.5 (rev. S2012)

Do all work on your own paper.

1. State the amplitude, period, horizontal shift, vertical shift, and range for the graph of each function.

   a) $y = -5\sin\frac{1}{4}(x+\pi)+3$ $\left(x-(-\pi)\right)$ $-2 \le y \le 8$

   amp = 5, per = 8π, left π, ↑3,

   b) $y = \cos 2\pi(x-3)-4$ $-5 \le y \le -3$

   amp = 1, per = 1, rt 3, ↓4

2. State the period and x–intercepts of the asymptotes of the graph of $y = 4\tan 2x$. per $\pi/2$

   $(-\pi/4, 0)$ $(\pi/4, 0)$

3. Write an equation of a trigonometric function:

   a) a cosine function with maximum at (0, 3) and minimum at $\left(\frac{\pi}{2}, -1\right)$

   $K = \frac{3+-1}{2} = 1$

   $y = 2\cos 2x + 1$

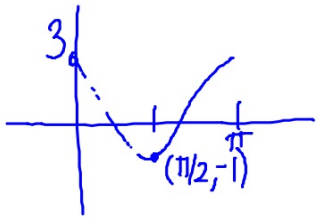
   b) a sine function with amplitude 4, period $\frac{\pi}{4}$, right shift $\frac{\pi}{2}$, shift up 1, and reflection in the lin

   $y = 1$

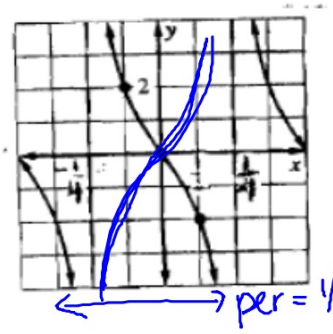
   $2\pi/b = \pi/4$

   $y = -4\sin 8(x-\pi/2)+1$

a)



c) (write a tangent equation)



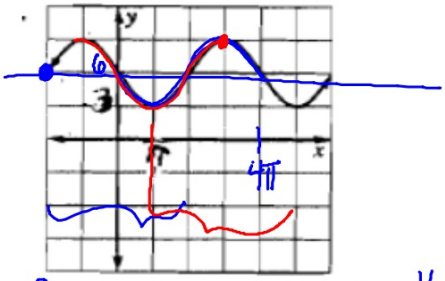
flip

$\pi/b = 1/2$

$b = 2\pi$

$y = -2 \tan 2\pi x$

d) (write sine and cosine equations)



(sin) $y = -3 \sin \frac{1}{2}x + 6$

$y = 3 \sin \frac{1}{2}(x + 2\pi) + 6$

(cos)

$y = 3 \cos \frac{1}{2}(x + \pi) + 6$

$y = -3 \cos \frac{1}{2}(x - \pi) + 6$

4. Solve for x over the interval $0 \le x < 2\pi$.

a) $3\csc^2 x = 6$

b) $3\cos^2 x = \sin^2 x - 2\sin x + 1$

$3(1-\sin^2 x) = \sin^2 x - 2\sin x + 1$

$3 - 3\sin^2 x = \sin^2 x - 2\sin x + 1$

$0 = 4\sin^2 x - 2\sin x - 2$

$0 = 2\sin^2 x - \sin x - 1$

$0 = (2\sin x + 1)(\sin x - 1)$

$\sin x = -\frac{1}{2}$ $\quad$ $\sin x = 1$

Q3 Q4 $\quad$ $\frac{\pi}{2}$

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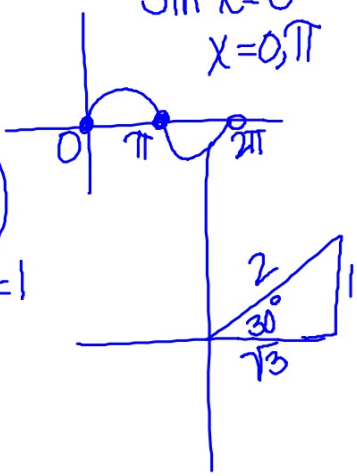
c) $3\sin x \sec x - 2\sqrt{3}\sin x = 0$

$\sin x(3\sec x - 2\sqrt{3}) = 0$

$\sin x = 0$ $\quad$ $3\sec x = 2\sqrt{3}$

$x = 0, \pi$ $\quad$ $\sec x = \frac{2\sqrt{3}}{3}$



$\cos x = \frac{3\sqrt{3}}{2\sqrt{3}\sqrt{3}}$

$\cos x = \frac{3\sqrt{3}}{6}$

Q1 Q4

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5. Solve for x over the interval $0° \le x < 360°$. Round angle measures to the nearest tenth of a degree.

a) $\tan x - 2 - 3\cot x = 0$

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

$\tan^2 x - 2\tan x - 3 = 0$

$(\tan x - 3)(\tan x + 1) = 0$

$\tan x = 3$ $\quad$ $\tan x = -1$

Q1 Q3 $\quad$ Q2 Q4

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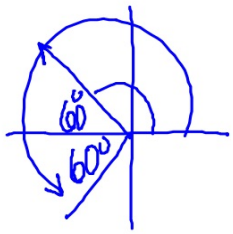
b) $\cos(3x) = \frac{-1}{2}$

$\cos y = -1/2$

Q2 Q3

$Y =$ 120° 240°



$(3x) \div 3$

480° 600°

840° 960°

6. Graph one period for each of the following functions. Be sure to label x- and y-axes.

a) $y = -3\cos(x-\pi)$

b) $y = \sin\frac{1}{3}\left(x+\frac{\pi}{2}\right)-2$

c) $y = 2\tan\frac{1}{4}(x-\pi)+1$

d) $y = -\frac{1}{2}\csc 2x$

e) $y = \sec\frac{1}{4}x - 2$

f) $y = 3\cot 2x$