

ph at 1  
ptotes:

range:  $[-\infty, \infty]$   
pd:  $2\pi$

Precal

Name: Key

## Review Graphing

(Graphs & Equations of Trigonometric Functions)

1) Graph at least two periods and show critical points:

$$y = -5 \cos(2x - \pi)$$

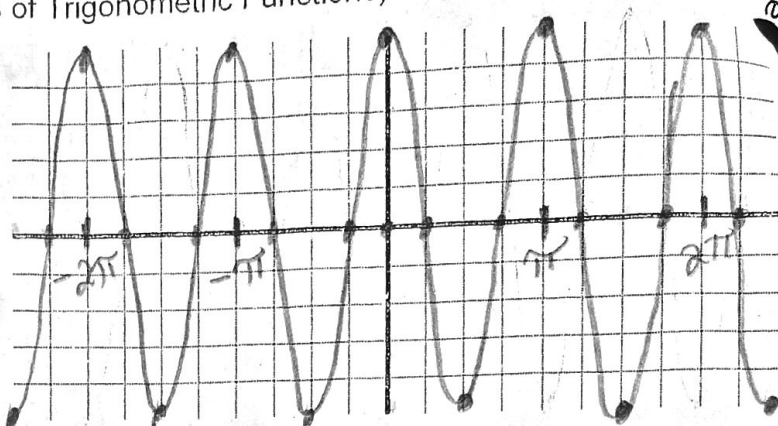
$$y = -5 \cos\left(2\left(x - \frac{\pi}{2}\right)\right)$$

Domain:  $(-\infty, \infty)$

Range:  $[-5, 5]$

Amp: 5 pd:  $\frac{2\pi}{2} = \pi$

V.S.: N/A P.S.: right  $\frac{\pi}{2}$



2) Graph at least two periods and show critical points:

$$y = 3 \sin(.5x - \pi) + 1$$

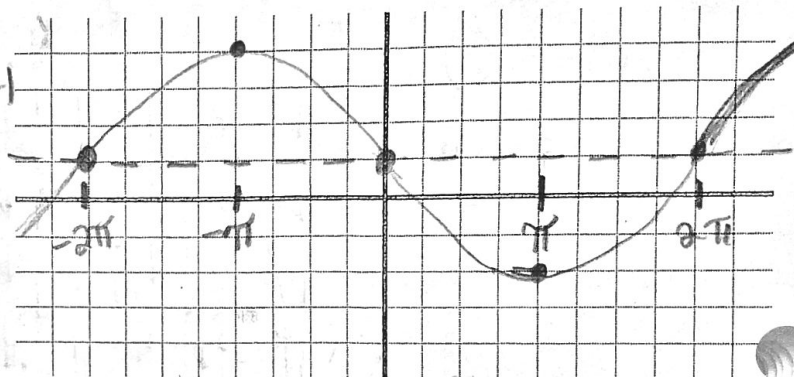
$$y = 3 \sin\left(\frac{1}{2}(x - 2\pi)\right) + 1$$

Domain:  $(-\infty, \infty)$

Range:  $[-2, 4]$

Amp: 3 pd:  $\frac{2\pi}{1/2} = 4\pi$

V.S.: up 1 P.S.: right  $2\pi$



3) Graph at least two periods, show critical points & asymptotes:

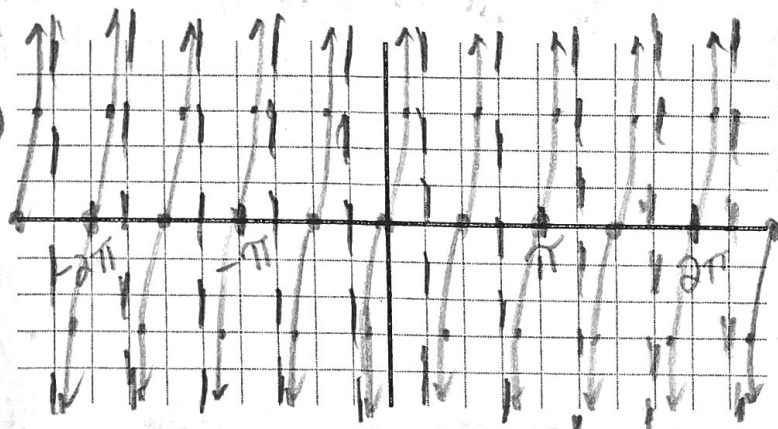
$$y = 3 \tan(2x - \pi)$$

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

Domain:  $(-\infty, \infty)$

pd:  $\frac{\pi}{2}$  Critical pts:  $(0, 0)$   $(\frac{1}{2}, -3)$   $(\frac{3}{4}, 3)$

V.S.: N/A H.S.: right  $\frac{\pi}{2}$



4) Graph at least two periods, show critical points, & asymptotes:

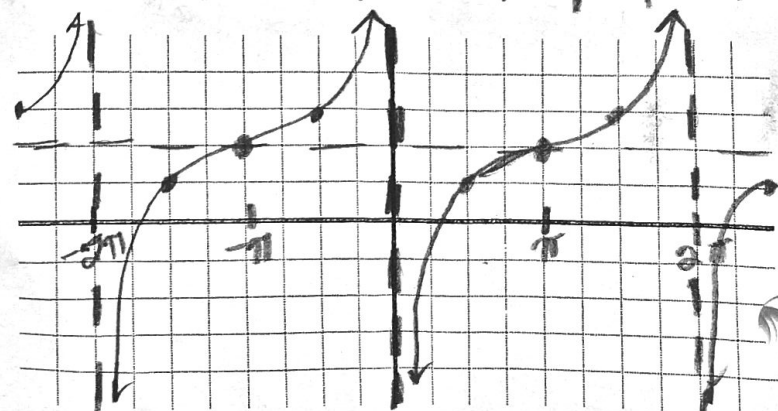
$$y = -\cot(.5x) + 2$$

Range:  $(-\infty, \infty)$

pd:  $\frac{\pi}{1/2} = 2\pi$  Critical pts:  $(\frac{\pi}{2}, 1)$   $(\pi, 2)$   $(\frac{3\pi}{2}, 3)$

V.S.: Up 2 H.S.: N/A

Domain:



Graph at least two periods, & show asymptotes:  $y = \sec(3x) + 2$

Range:  $(-\infty, -1] \cup [3, \infty)$

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

V.S.:  $up\ 2$  H.S.:  $N/A$

6) Graph at least two periods, & show asymptotes:  $y = 4\csc(.5x)$

Range:  $(-\infty, -2] \cup [2, \infty)$

pd:  $\frac{2\pi}{.5} = 4\pi$

V.S.:  $N/A$  H.S.:  $N/A$

7) Graph at least two periods, & show asymptotes:  $y = -2\sec(2x + \pi) - 2$

$$y = -2\sec\left(2\left(x + \frac{\pi}{2}\right)\right) - 2$$

Range:  $(-\infty, -4] \cup [0, \infty)$

pd:  $\frac{2\pi}{2} = \pi$

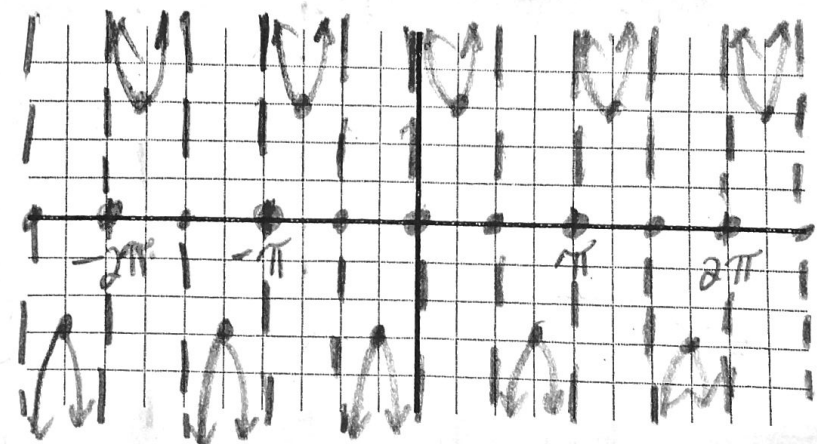
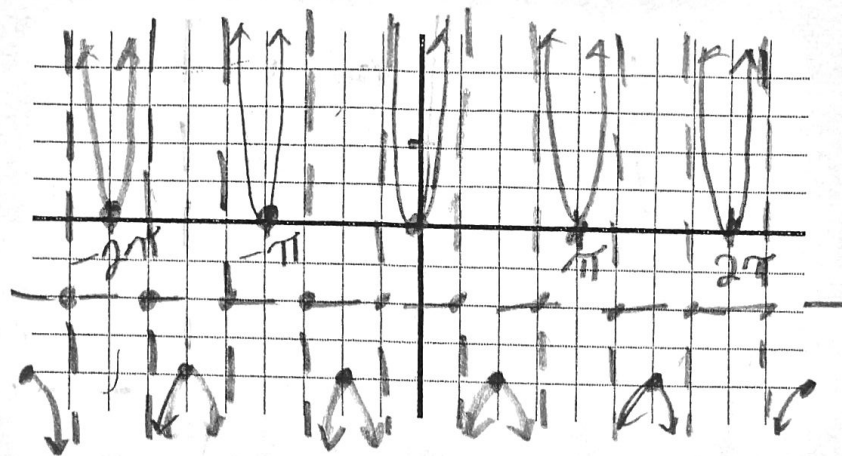
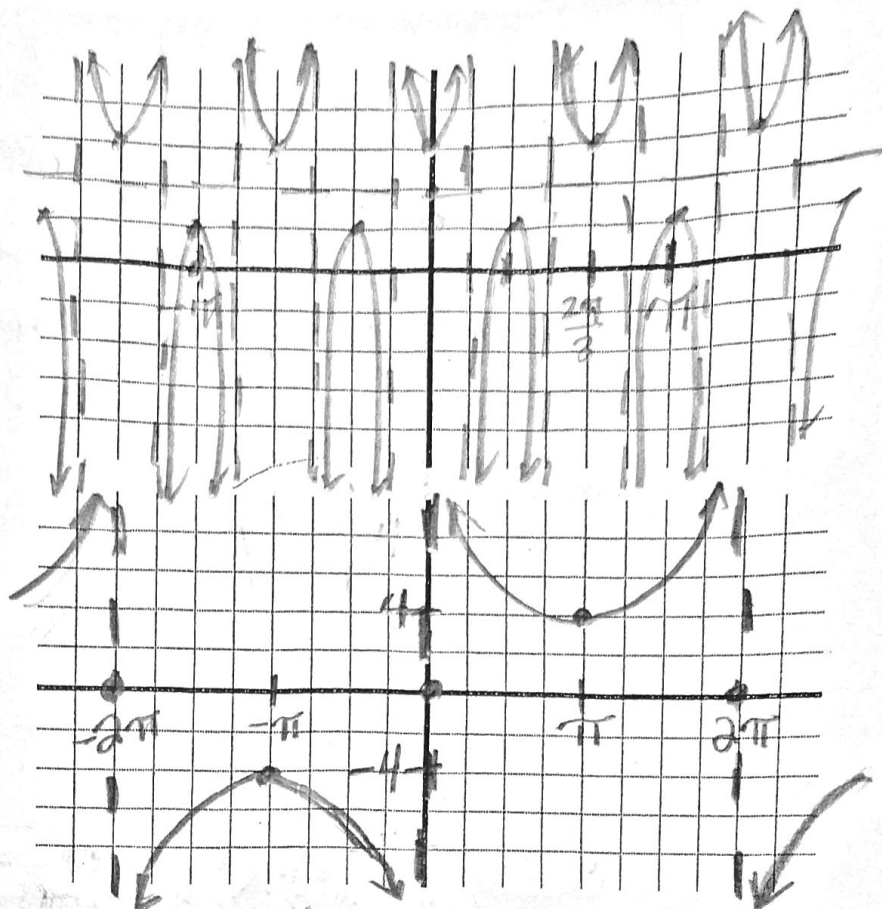
V.S.:  $down\ 2$  H.S.:  $left\ \frac{\pi}{2}$

8) Graph at least two periods, & show asymptotes:  $y = 3\csc[2(x - \pi)]$

Range:  $(-\infty, -3] \cup [3, \infty)$

pd:  $\frac{2\pi}{2} = \pi$

V.S.:  $N/A$  H.S.:  $left\ \pi$



9) Describe the transformations of a basic trigonometric function which would result in the function below:

a)  $y = -3 \sec(x + 3) - 5$

- reflect over x-axis
- vertical stretch by 3
- shift left + 3, down 5

b)  $y = .7 \csc(3(x - 3/4)) + 1$

- vertical stretch by .7
- horizontal shrink by  $\frac{1}{3}$
- shift right  $3/4$ , up 1

10) Construct a sinusoidal function using the information given: (this means give me an equation)

a) A cosine curve with reflected over x-axis, vertically stretched by a factor of 3, horizontally stretched by a factor of 2 and shifted left 4 units.

$$y = -3 \cos\left(\frac{1}{2}(x+4)\right)$$

b) A sine curve reflected over the y-axis, vertically shrunk by a factor of 1/3, horizontally shrunk by a factor of 3, and shifted up 7 units.

$$y = \frac{1}{3} \sin\left(-\frac{1}{3}x\right) + 7$$

c) Maximum located at (3, 1) & minimum located at (4, -7)

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

$$b = \pi$$

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



$$y = -4 \cos(\pi x) - 3 \text{ or}$$

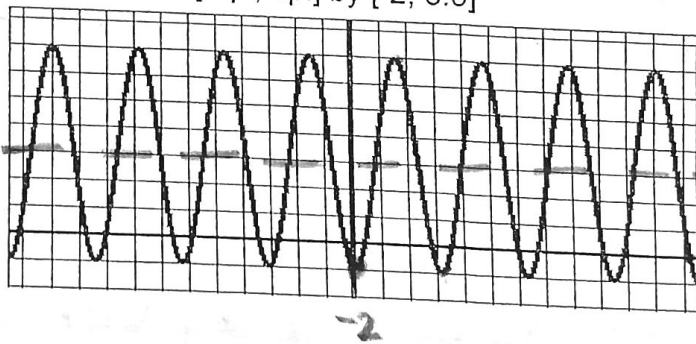
$$y = 4 \sin\left(\pi\left(x - \frac{1}{2}\right)\right) - 3$$

d) This is a cosine function graphed in a window  $[-4\pi, 4\pi]$  by  $[-2, 8.3]$

$$y = -4 \cos(2x) + 3$$

or

$$y = 4 \sin\left(2\left(x - \frac{\pi}{4}\right)\right) + 3$$



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

$$b = 2$$

$$y = 3$$

frequency

$$\frac{1}{4\pi} = \frac{1}{\pi}$$

$$pd. = \pi$$

11) Solve each of the following on the interval  $0 \leq x \leq 2\pi$  (keep in mind how many answers there are...)

a)  $\tan x = 1$

$$x = \frac{\pi}{4}, \frac{3\pi}{4}$$

b)  $\sec x = .5$

$$\cos x = 2$$

no solution

c)  $\csc x = \frac{\sqrt{3}}{2}$

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

no solution

d)  $\cot x = \frac{1}{\sqrt{3}}$

$$\tan x = \frac{\sqrt{3}}{1}$$



$$x = \frac{\pi}{3}, \frac{4\pi}{3}$$