

Review Chapter 4 (Unit 5)

(Graphs & Equations of Trigonometric Functions)

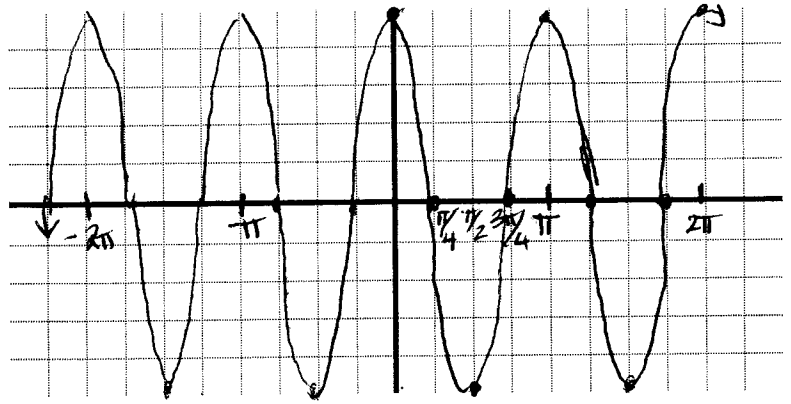
1) Graph at least two periods and show critical points:

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

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

Amp: 5 pd: π

V.S.: none P.S.: right $\frac{\pi}{2}$



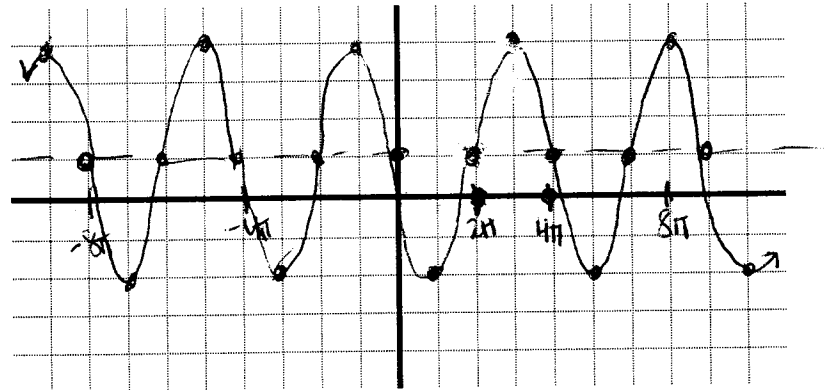
2) Graph at least two periods and show critical points:

$$y = 3 \sin(0.5x - \pi) + 1$$

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

Amp: 3 pd: 4π

V.S.: up 1 P.S.: right 2π

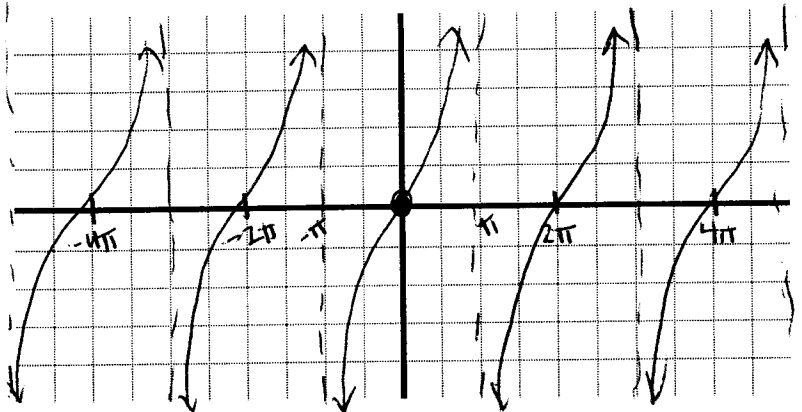


3) Graph at least two periods, show critical points:

$$y = 3 \tan\left(\frac{1}{2}x\right)$$

pd: 2π

V.S.: none H.S.: horizontal stretch * 2

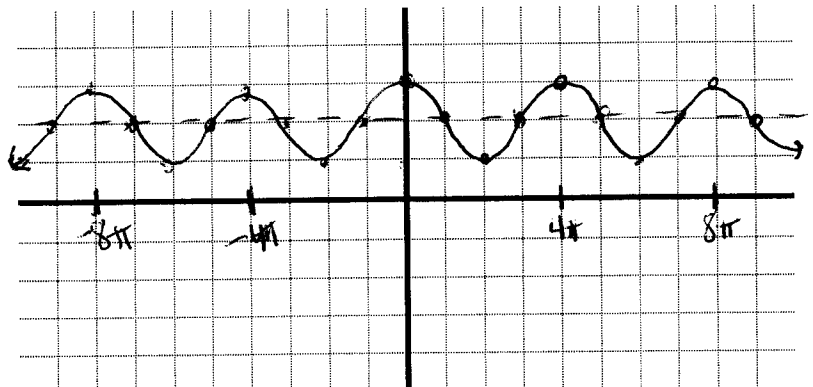


4) Graph at least two periods, show critical point:

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

Amp: 1 pd: 4π

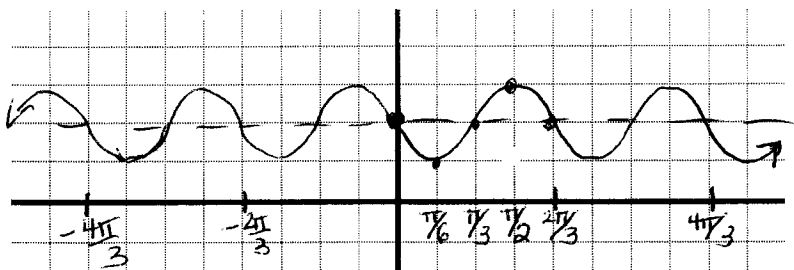
V.S.: up 2 P.S.: none



5) Graph at least two periods and show critical points: $y = -\sin(3x) + 2$

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

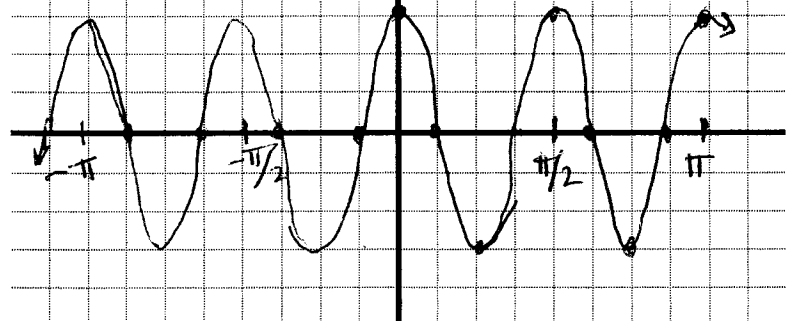
V.S.: 2 P.S.: none



6) Graph at least two periods and show critical points: $y = 3\cos(4x)$

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

V.S.: none P.S.: none

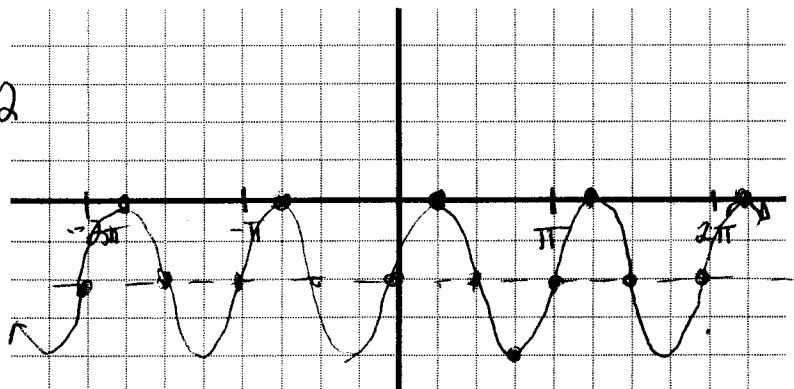


7) Graph at least two periods and show critical points: $y = -2\sin(2x + \pi) - 2$

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

Amp: 2 pd: π

V.S.: down 2 P.S.: left $\pi/2$

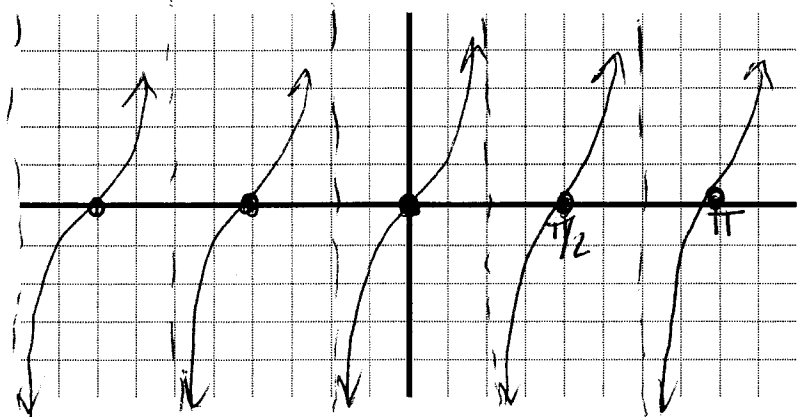


8) Graph at least two periods, & show asymptotes: $y = 3\tan[2(x - \pi)]$

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

V.S.: none H.S.: $\frac{1}{2}$

en zombal
shrink



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

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

parent $y = \cos x$

left 3
vert. stretch * 3
refl over x-axis
down 5

b) $y = 0.7 \sin(3(x - \frac{4}{3})) + 1$

parent $y = \sin x$

horiz shift right $\frac{4}{3}$
horiz. shrink * $\frac{1}{3}$
vert shrink * 0.7
up 1

10) Construct a sinusoidal function using the information given: (this means give 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.

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

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

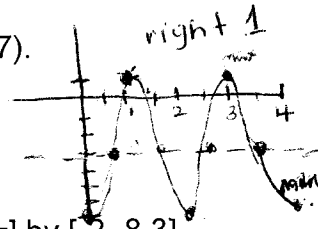
$y = \frac{1}{3} \sin(-\frac{1}{3}x) + 7$

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

amp = $\frac{1 - (-7)}{2} = 4$ shift down 3

horiz distance from max to min = 1

$\hookrightarrow = \frac{1}{2}$ of period per = 2



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

$B = \pi$

cosine

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

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

amp = 4

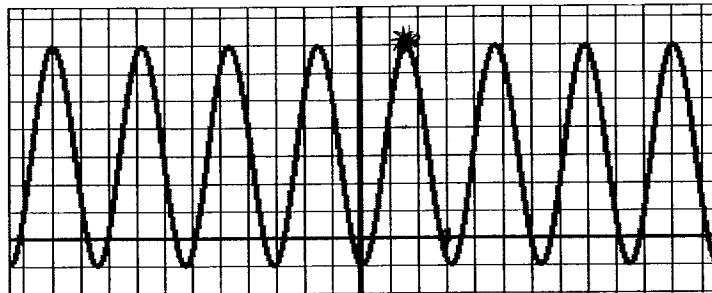
per = π

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

$B = 2$

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

$y = 4 \cos(2(x - \frac{\pi}{2})) + 3$ OR $y = 4 \cos(2x) + 3$



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