4.5 Graphs of Trig Functions (Continued)

Wednesday, April 01, 2015
2:41 PM

Ex. 9 Graph the trig. function and find the amplitude, the period, and the end points of the phase shift.

Suggested order for graphing:
- Reflection
- Amp
- Period
- Phase Shift
- Vertical Shift

a) $y = 3\sin(2x - \pi)$ — PS to the right

Amp: $|3| = 3$

Per: $\frac{2\pi}{b}$

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

π

$\frac{\pi}{4} \rightarrow \frac{4\pi}{4}$

$\left[0, \frac{\pi}{4}, \frac{\pi}{2}, \frac{3\pi}{4}, \pi\right]$

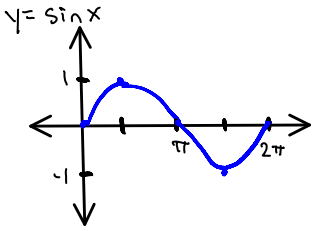
P.S

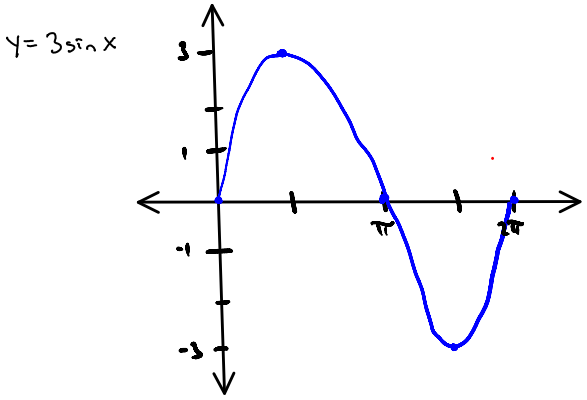
$bx - c = 0$ | $bx - c = 2\pi$

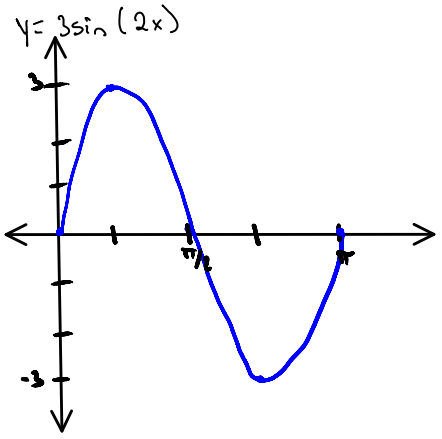
$2x - \pi = 0$ | $2x - \pi = 2\pi$

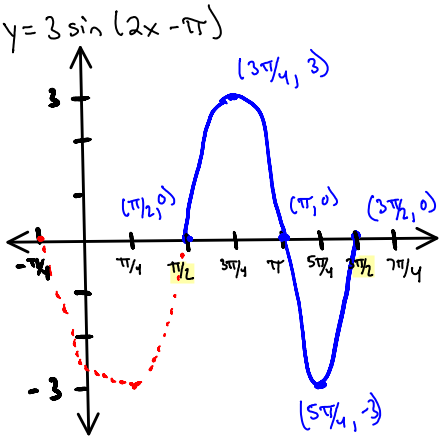
$x = \frac{\pi}{2}$ | $x = \frac{3\pi}{2}$

Left EP | Rt EP









P.S. is left

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

Reflection, Amp: $|-2|$, Per: $\frac{2\pi}{b}$, P.S

Reflection , Amp = $|-2|$, Per: $\frac{2\pi}{b}$, P.S.

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

V.S. = ↓ 2 $= 4\pi$ $\frac{4\pi}{4} = \pi$

$[0, \pi, 2\pi, 3\pi, 4\pi]$

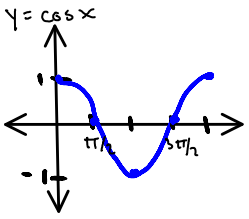
$bx - c = 0$ $bx - c = 2\pi$

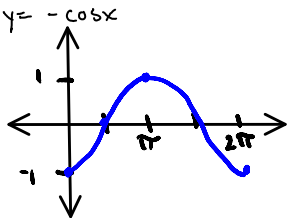
$\frac{1}{2}x + \pi = 0$ $\frac{1}{2}x + \pi = 2\pi$

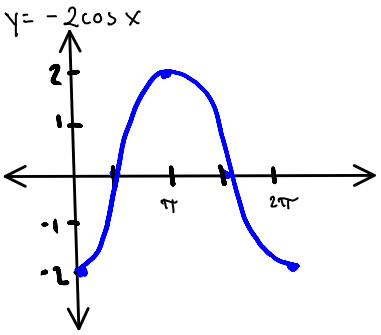
$\frac{1}{2}x = -\pi$ $\frac{1}{2}x = \pi$

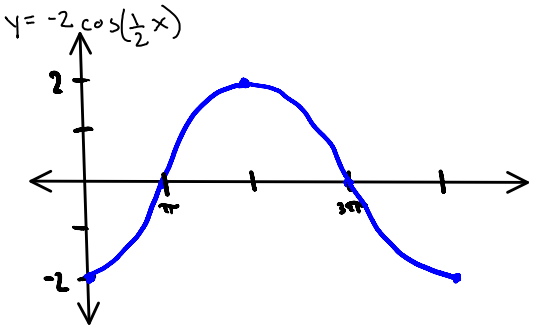
$x = -2\pi$ $x = 2\pi$

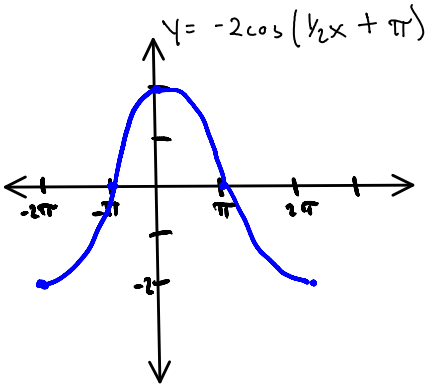
Lft EP At EP

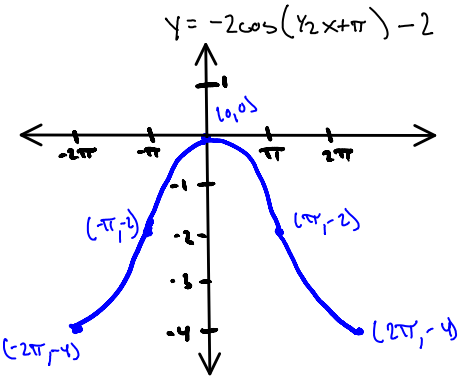












Ex. 10 Write the function given the following information:

a) Amp = 4 Per = $\frac{2\pi}{3}$ p.s. = π right funct: cos

Amp = $|4|$

$a = \pm 4$

could be be either

Per: $\frac{2\pi}{b}$

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

$2\pi b = 6\pi$

$b = 3$

$ps = -\frac{c}{b}$

$\pi = -\frac{c}{3}$

$c = -3\pi$

$y = \pm 4\cos(3x - 3\pi)$

b) Amp: 1/7 per: $\frac{3\pi}{4}$ PS: $-\frac{3\pi}{4}$ (left) V.S. = +4 funct: Sin

Amp: $|a|$

Amp: $|1/7|$

$a = \pm\frac{1}{7}$

per: $\frac{2\pi}{b}$

$\frac{3\pi}{4} = \frac{2\pi}{b}$

$3\pi b = 8\pi$

$b = \frac{8}{3}$

PS: $-\frac{c}{b}$

$-\frac{3\pi}{4} = -\frac{c}{8/3}$

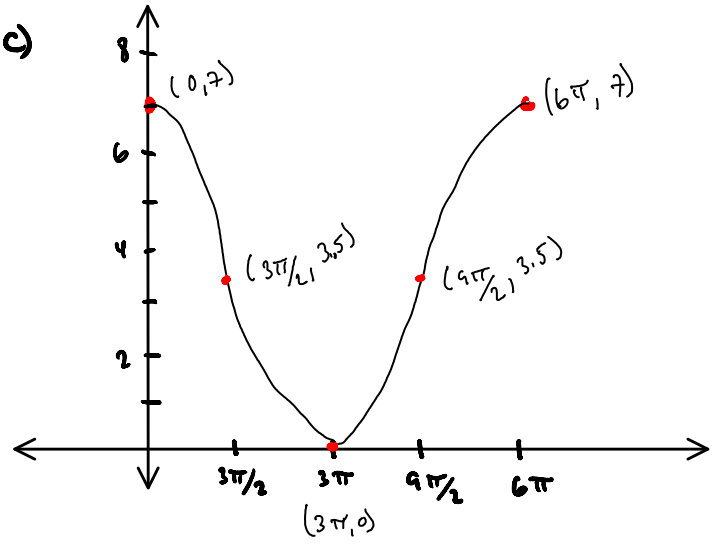
$-\frac{3\pi}{4} = -\frac{3c}{8}$

$c = -\frac{3\pi}{4}\cdot\left(\frac{8}{-3}\right)$

$c = 2\pi$

$y = \pm\frac{1}{7}\sin\left(\frac{8}{3}x + 2\pi\right) + 4$

c)



cos function

$y = a\cos(bx \pm c) \pm d$

Amp: $\frac{1}{2}|\max - \min|$

$= \frac{1}{2}|7 - 0|$

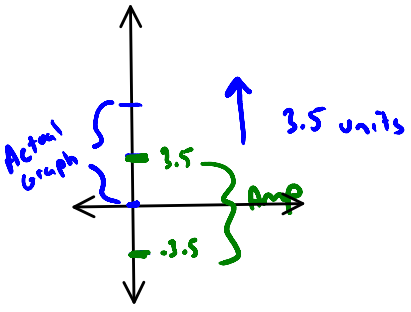
Amp: 3.5

Period: $\frac{2\pi}{b}$

$6\pi = \frac{2\pi}{b}$

$b = \frac{1}{3}$

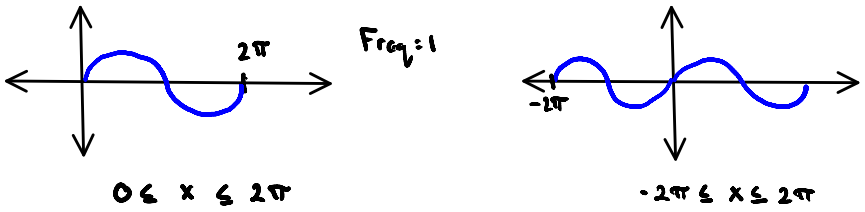
$y = 3.5\cos(1/3 x)$ Not final answer!



$y = 3.5\cos(1/3 x) + 3.5$

Frequency

It is the number of cycles a trig function completes in a given interval.



$0 \leq x \leq 2\pi$ $\quad -2\pi \leq x \leq 2\pi$

It is the reciprocal of the period.

Graphing on a Ti-84

When graphing on the calculator:

1. Radian Mode
2. ZOOM 7 (trig) makes the x-axis into radians
3. Change table interval to $\pi/2$ or π

ΔTbl = $\pi/2$ or π or $\pi/4$