Secondary 3 Honors: Unit 8: Trigonometry   Name:_____
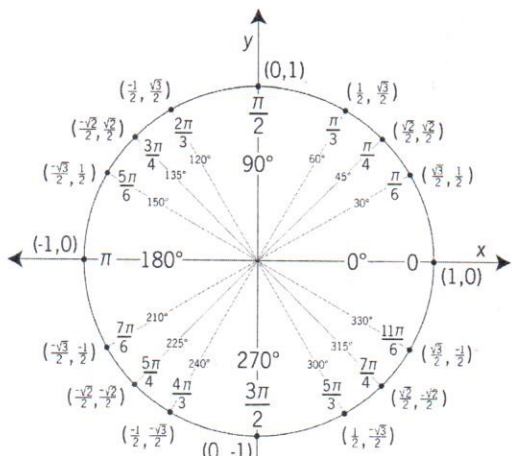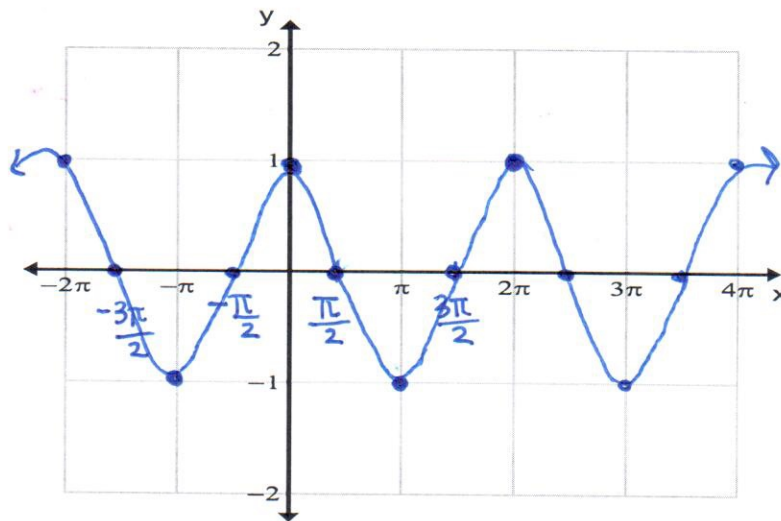
Lesson 8-5: Graphing Cosine Notes

Today we will learn:
- To identify domain, range, amplitude, period, and graph cosine.
- That period functions regularly repeat themselves.
- That trig functions model periodic behavior.

Graphing Cosine: $y = a\cos bx$

(x, y)

$x = \cos\theta$

Properties of graphing sine and cosine functions: $y = a\cos bx$

Amplitude: a	Period: $\dfrac{2\pi}{b}$

Find the amplitude and period of each of the following:

$y = 4\cos 3x$

$a = 4$

per: $\dfrac{2\pi}{3}$

$y = \dfrac{1}{4}\cos x$

amp: $\dfrac{1}{4}$

per: 2π

$y = 3\cos\dfrac{1}{4}x$

amp: 3
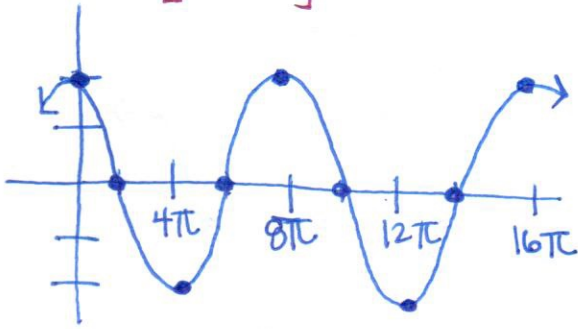
per: $\dfrac{2\pi}{1/4} = 8\pi$

Graph the following functions by hand. Find the amplitude, period, domain and range for each.

$$y = 2\cos\frac{1}{4}x$$

amp: 2

per: $\frac{2\pi}{1/4} = 8\pi$

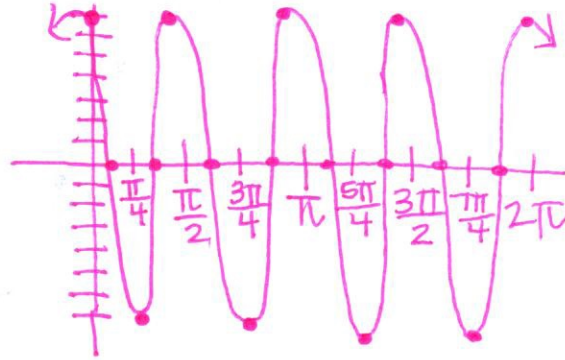D: $(-\infty, \infty)$

R: $[-2, 2]$

$$y = 7\cos 4x$$

amp: 7

per: $\frac{2\pi}{4} = \frac{\pi}{2}$
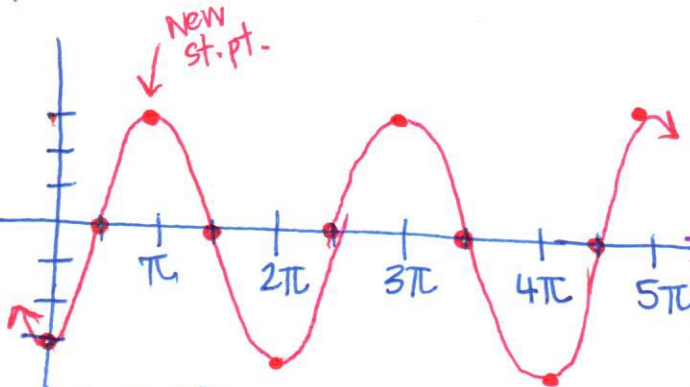
D: $(-\infty, \infty)$

R: $[-7, 7]$

Graph the following functions by hand. Find the amplitude, period, domain and range for each.

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

amp: 3

per: 2π
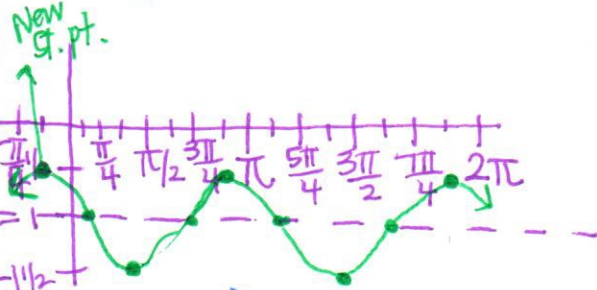
⎰ amp. stretch of 3
⎱ phase shift R π

New st. pt.

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

R: $[-3, 3]$

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

$y = \frac{1}{2}\cos 2\left(\theta + \frac{\pi}{8}\right) - 1$

amp: $\frac{1}{2}$

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

⎰ amp. comp of 1/2
⎱ periodic compression
   phase shift L π/8
   phase shift ↓ 1

New st. pt.

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

R: $\left[-1\frac{1}{2}, -\frac{1}{2}\right]$