

A Cosine Wave is commonly described by 4 components. The only difference between a Sine Wave and a Cosine Wave is the Phase Shift.

Parts of a Cosine Wave	Visual
Amplitude: The amplitude of a wave is the distance from the midline to highest point of the wave. (half of the vertical displacement.) $\text{Amplitude} = \frac{(\text{Highest } Y - \text{Lowest } Y)}{2}$	
Period: The period of the wave is the horizontal distance of one complete cycle. $\text{Period} = (\text{Crest } X) - (\text{Previous Crest } X)$ $\text{Period} = (\text{Trough } X) - (\text{Previous Trough } X)$	
Phase Shift: The amount the wave is shifted right or left $\text{Phase Shift} = \text{Crest } X$	
Vertical Shift: The amount the wave is shifted up or down $\text{Vertical Shift} = \frac{(\text{Highest } Y + \text{Lowest } Y)}{2}$	

$$y = a \cdot \cos(b(x - c)) + d$$

a = Amplitude

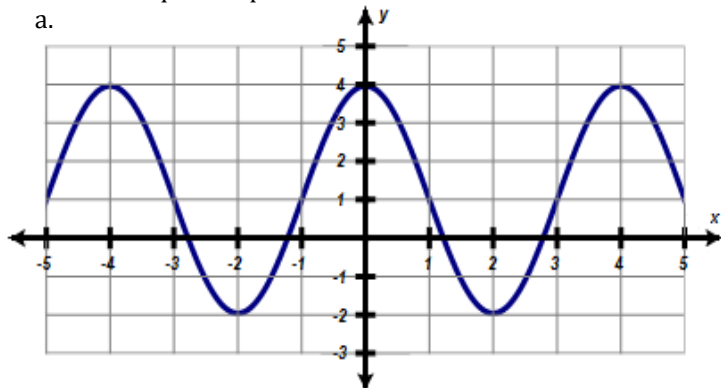
c = Phase Shift

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

d = Vertical Shift

1. Find the requested parameters of each COSINE wave shown in the graphs and then a possible equation.

a.



Amplitude =

Period =

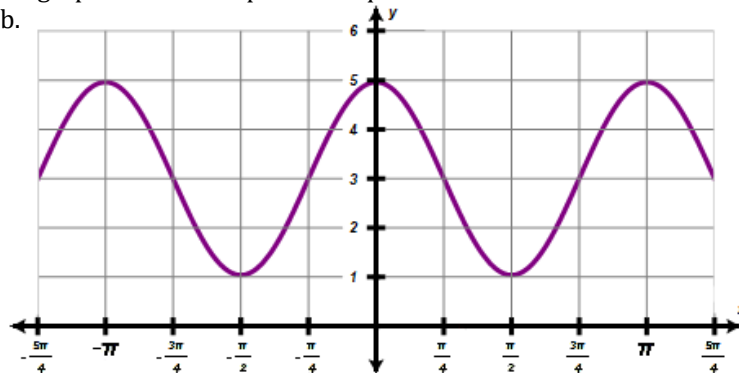
Phase Shift =

Vertical Shift =

Equation:

(Using Cosine)

b.



Amplitude =

Period =

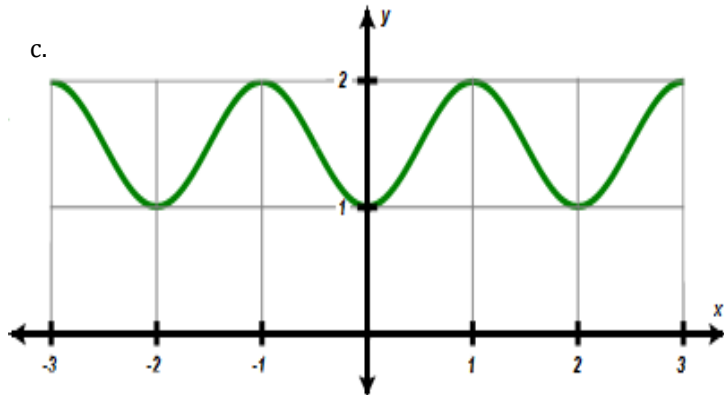
Phase Shift =

Vertical Shift =

Equation:

(Using Cosine)

c.



Amplitude =

Period =

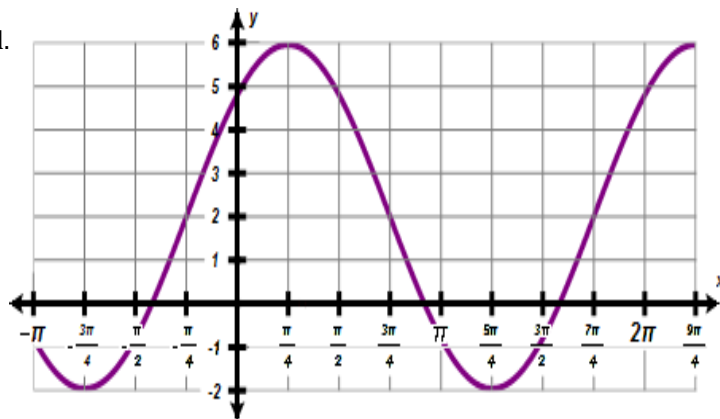
Phase Shift =

Vertical Shift =

Equation:

(Using Cosine)

d.



Amplitude =

Period =

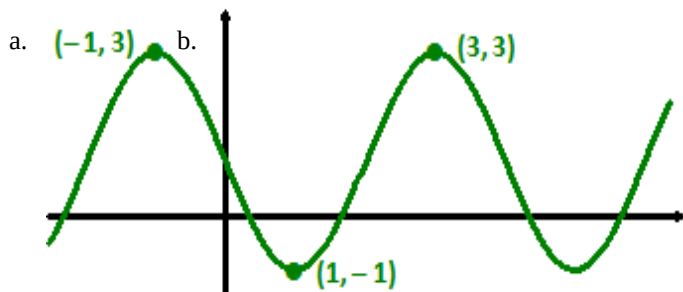
Phase Shift =

Vertical Shift =

Equation:

(Using Cosine)

2. Find the requested parameters and a possible equation of the following graphs using Cosine.



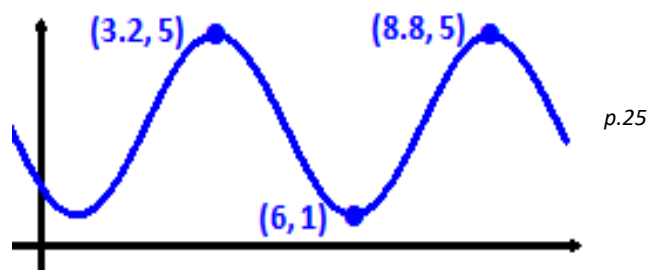
Amplitude =

Period =

Phase Shift =

Vertical Shift =

Equation:
(Using Cosine)



Amplitude =

Period =

Phase Shift =

Vertical Shift =

Equation:
(Using Cosine)

3. Find the requested parameters based on the following equations.

a. $y = 6\cos(2(x+3))$

Amplitude =

Period =

Phase =

Vertical =

c. $y = 2\cos(3x-12)-5$

Amplitude =

Period =

Phase =

Vertical =

b. $y = \pi \cos\left(\frac{\pi}{3}(x-5)\right) + 1$

Amplitude =

Period =

Phase =

Vertical =

d. $y = -3\cos(\pi x + 5) + 4$

Amplitude =

Period =

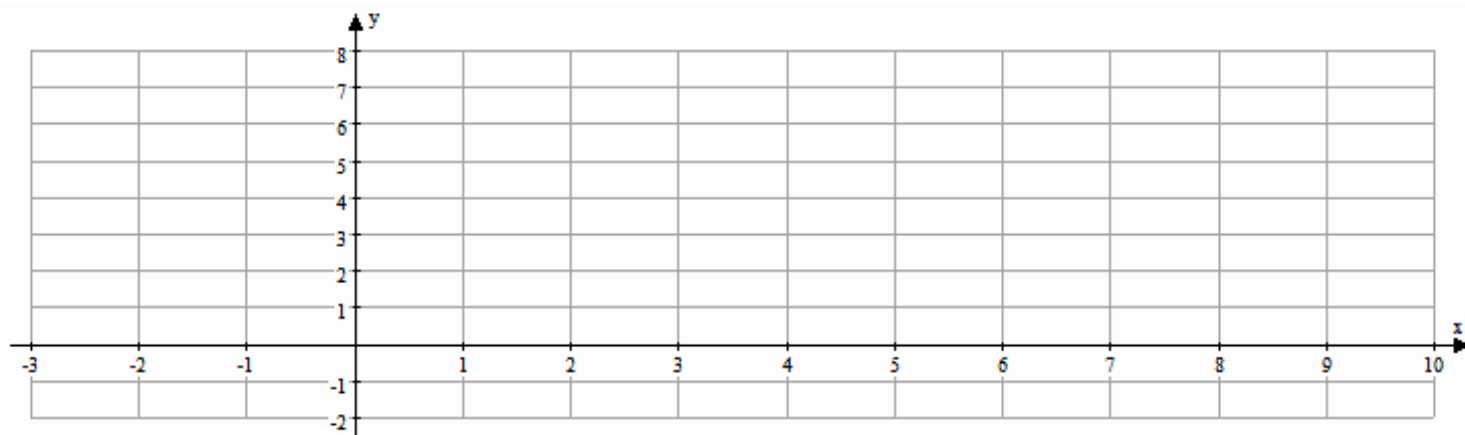
Phase =

Vertical =

4. Graph the following equation.

a.

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



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

