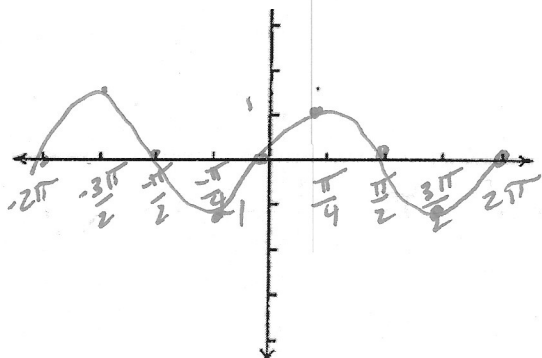


Section 2.5

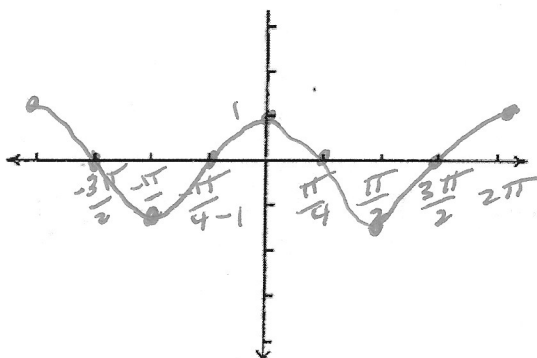
Identify the amplitude and period from an equation.

Graphing Sine and Cosine Functions

Graphing Sine Functions



Graphing Cosine Functions



**AMPLITUDE AND PERIOD**

The amplitude and period of the graphs of  $y = a \sin bx$  and  $y = a \cos bx$ , where  $a$  and  $b$  are nonzero real numbers, are:

Amplitude =  $|a|$       period =  $\frac{2\pi}{|b|}$

In Exercises 1 to 16, state the amplitude and period of the functions defined by each equation:

4-  $y = \sin \frac{2x}{3}$

$a = 1$   
 $P = \frac{2\pi}{2/3} = 3\pi$

10-  $y = -3 \cos x$

$a = 3$   
 $P = \frac{2\pi}{1} = 2\pi$

14-  $y = \frac{1}{2} \cos 2\pi x$

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

Steps for graphing Sine and Cosine:

$y = a \sin bx$

$y = a \cos bx$

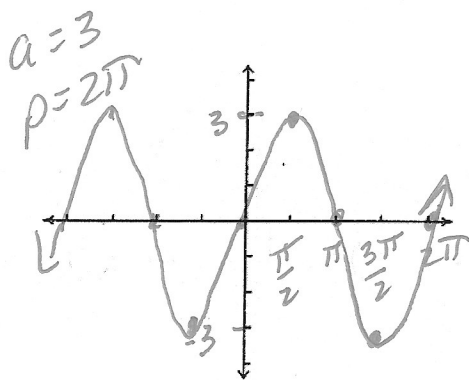
1- Find the amplitude  $|a|$  and period  $\frac{2\pi}{b}$

2- Find the "increment";  $\frac{\text{period}}{4}$

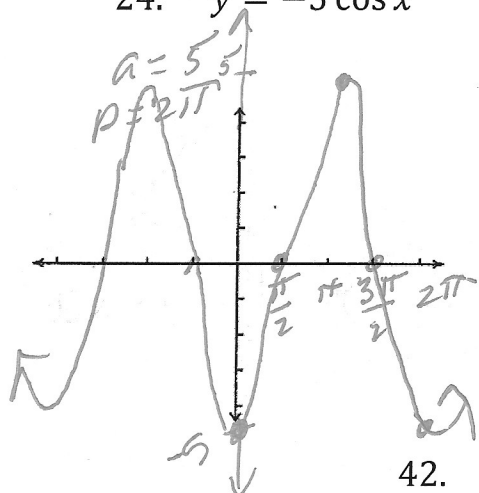
3- Label the graph and draw the function.

In Exercises 17 to 54, graph at least one full period of the function defined by each equation:

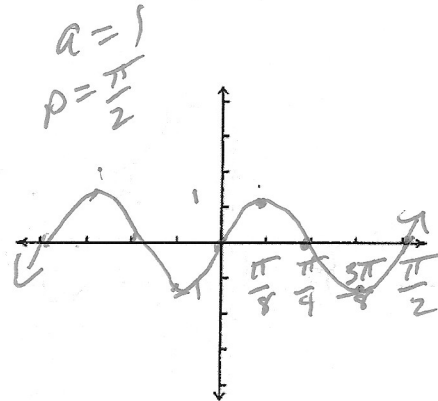
22.  $y = 3 \sin x$



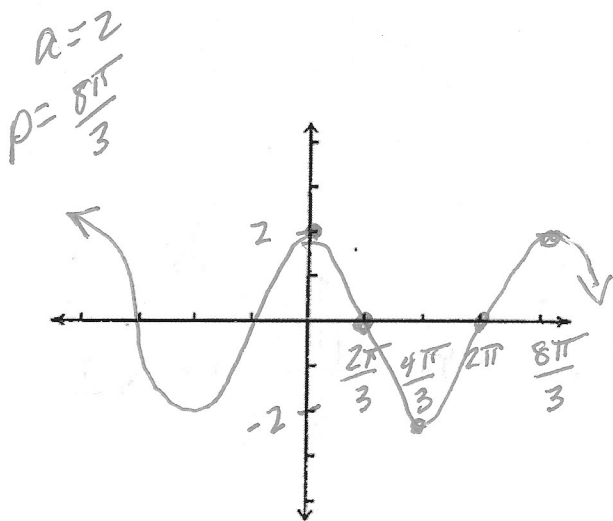
24.  $y = -5 \cos x$



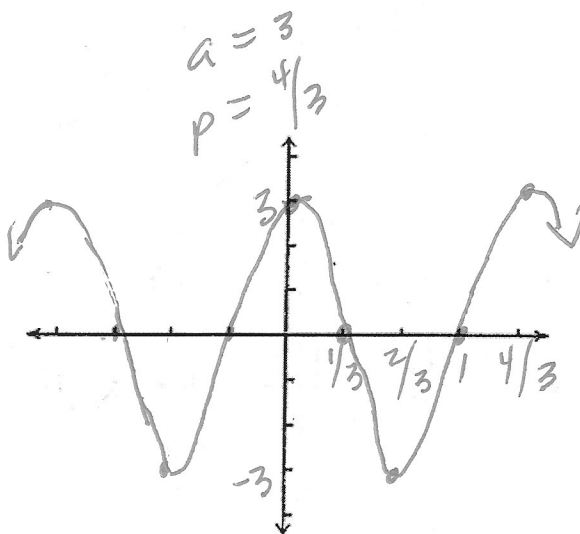
26.  $y = \sin 4x$



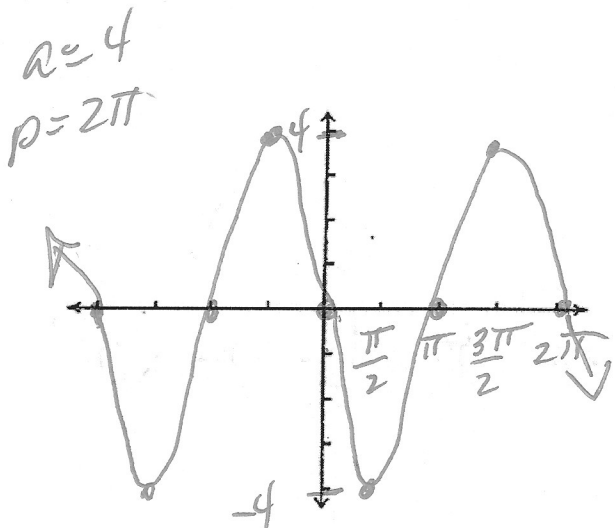
34.  $y = 2 \cos \frac{3x}{4}$



42.  $y = 3 \cos \frac{3\pi x}{2}$



23.  $y = -4 \sin x$



25.  $y = \cos 3x$

