

Lesson 8-3 Sinusoidal Functions

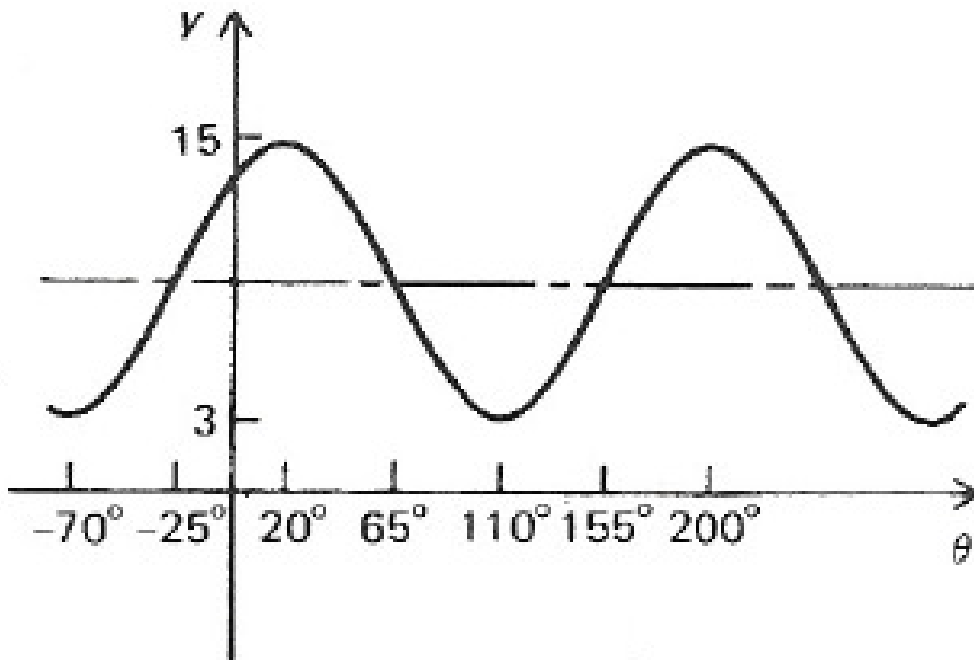
Objective: To translate sine and cosine graphs vertically and horizontally.

$$y = k + A \sin B(x - h)$$

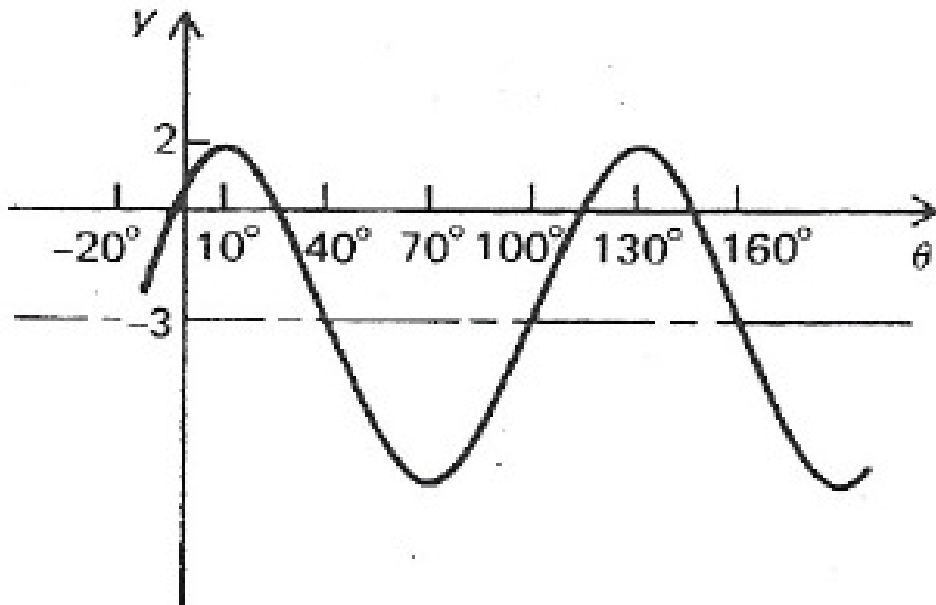
Or

$$y = k + A \cos B(x - h)$$

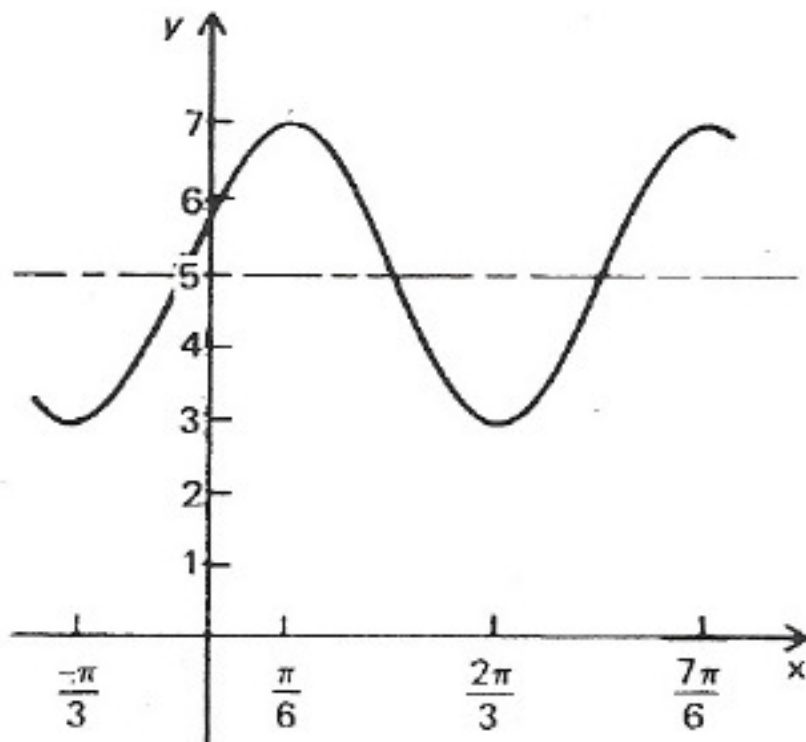
1. Write as many equations as possible, then use your graphing calculator to check to see if they are the same graph.



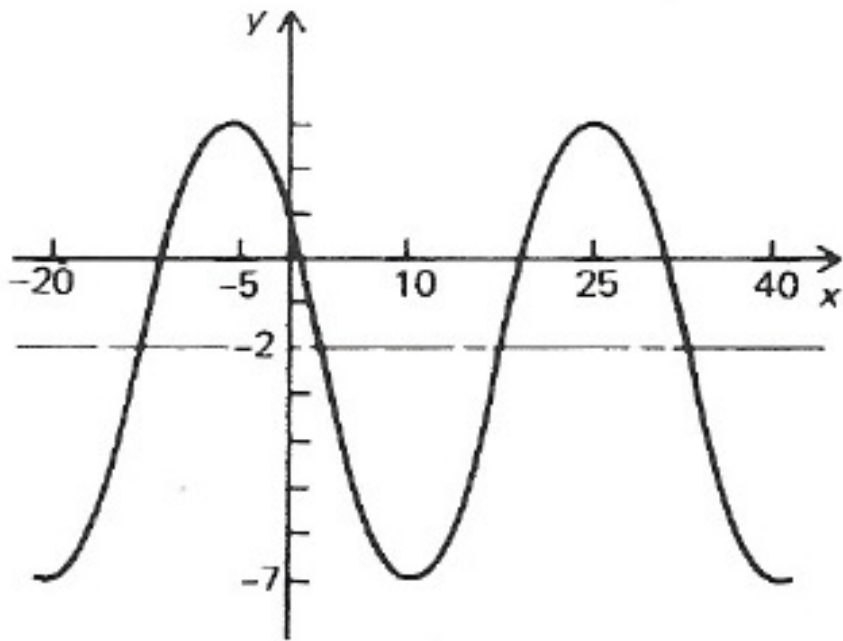
2.



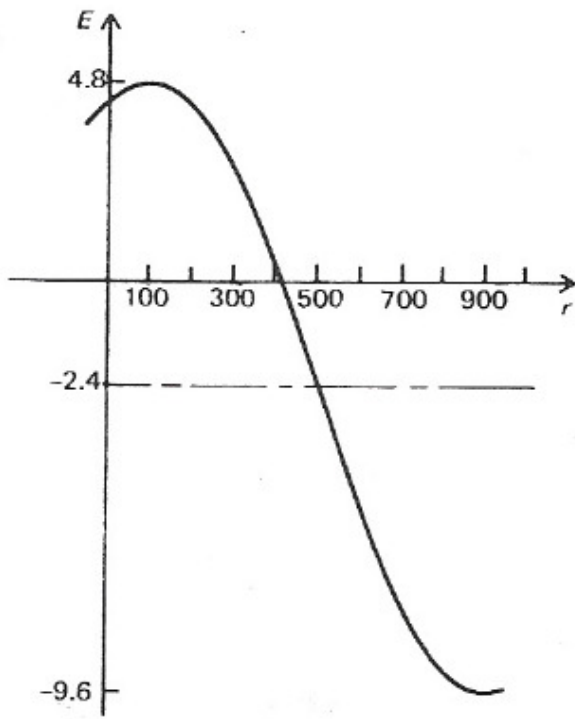
3.



4.



5.



Throughout the day, the depth of water at the end of a dock in Bar Harbor, Maine varies with the tides. The table shows the depths (in feet) at various times during the morning. (Source: Nautical Software, Inc.)

Time, t	Depth, y
Midnight	3.4
2 A.M.	8.7
4 A.M.	11.3
6 A.M.	9.1
8 A.M.	3.8
10 A.M.	0.1
Noon	1.2

- Use a trigonometric function to model the data.
- Find the depths at 9 A.M. and 3 P.M.
- A boat needs at least 10 feet of water to moor at the dock. During what times in the afternoon can it safely dock?