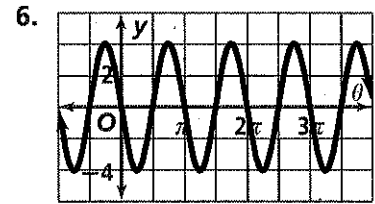
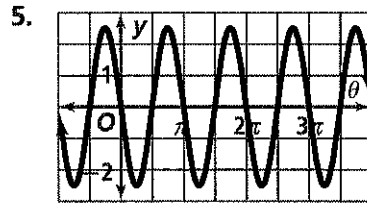
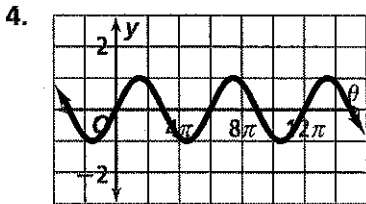
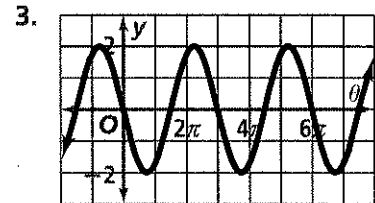
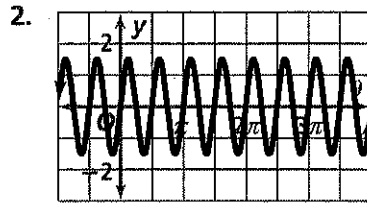
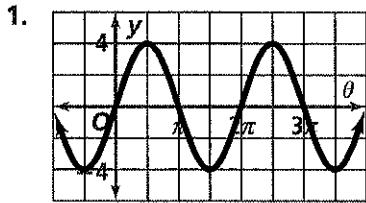


# Practice 13-4

## The Sine Function

Find the amplitude and period of each sine curve. Then write an equation for each curve.



Sketch one cycle of each sine curve. Assume  $a > 0$ . Write an equation for each graph.

7. amplitude = 2; period =  $\pi$

8. amplitude = 3; period =  $2\pi$

9. amplitude = 2; period =  $\frac{\pi}{2}$

10. amplitude = 2; period =  $\frac{\pi}{4}$

11. amplitude = 1.5; period =  $\frac{\pi}{3}$

12. amplitude = 2.5; period =  $2\pi$

Sketch one cycle of the graph of each sine function.

13.  $y = 2 \sin \theta$

14.  $y = -2 \sin 4\theta$

15.  $y = \sin 2\theta$

16.  $y = 3 \sin \frac{\theta}{2}$

17.  $y = -\sin 2\theta$

18.  $y = -5 \sin 3\theta$

19.  $y = -3 \sin 2\theta$

20.  $y = 4 \sin 5\theta$

21.  $y = -4 \sin \frac{\theta}{2}$

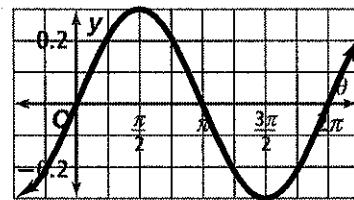
Use the graph at the right to find the value of  $y = 0.3 \sin \theta$  for each value of  $\theta$ .

22. 6 radians

23.  $\frac{\pi}{4}$  radians

24.  $\frac{3\pi}{4}$  radians

25.  $\frac{\pi}{2}$  radian



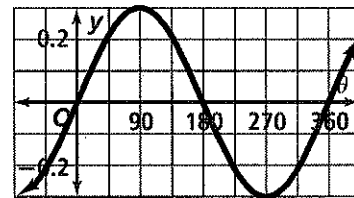
Use the graph at the right to find the value of  $y = 0.3 \sin \theta$  for each value of  $\theta$ .

26.  $160^\circ$

27.  $135^\circ$

28.  $270^\circ$

29.  $225^\circ$



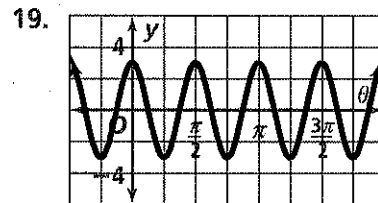
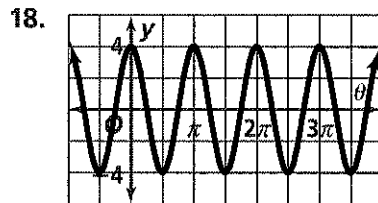
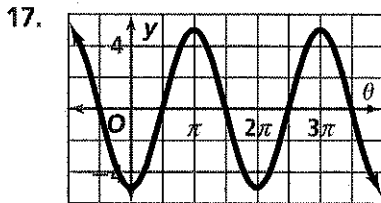
# Practice 13-5

## The Cosine Function

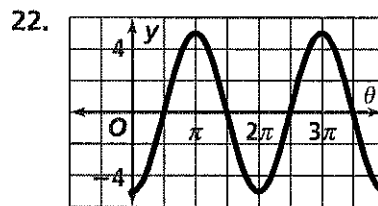
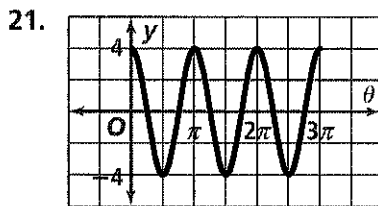
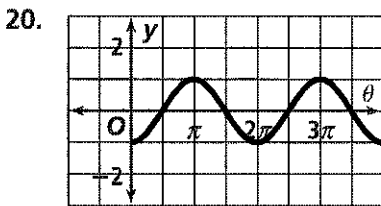
Sketch the graph of each function in the interval from 0 to  $2\pi$ .

- |                          |                                       |                                |
|--------------------------|---------------------------------------|--------------------------------|
| 1. $y = \cos \theta$     | 2. $y = 2 \cos \pi\theta$             | 3. $y = 5 \cos \theta$         |
| 4. $y = -\cos \theta$    | 5. $y = -5 \cos \theta$               | 6. $y = \cos 2\pi\theta$       |
| 7. $y = -2 \cos 2\theta$ | 8. $y = 3 \cos 4\theta$               | 9. $y = \cos \frac{\theta}{2}$ |
| 10. $y = 3 \cos 8\theta$ | 11. $y = -4 \cos \pi\theta$           | 12. $y = 0.5 \cos \pi\theta$   |
| 13. $y = -\cos 2\theta$  | 14. $y = -3 \cos \frac{\pi}{2}\theta$ | 15. $y = 4 \cos \pi\theta$     |
16. Suppose 12 in. waves occur every 5 s. Write an equation using a cosine function that models the height of a water particle as it moves from crest to crest.

Write the equation of a cosine function for each graph.



Find the period and amplitude of each cosine function. Identify where the maximum value, minimum value, and zeros occur in the interval from 0 to  $2\pi$ .



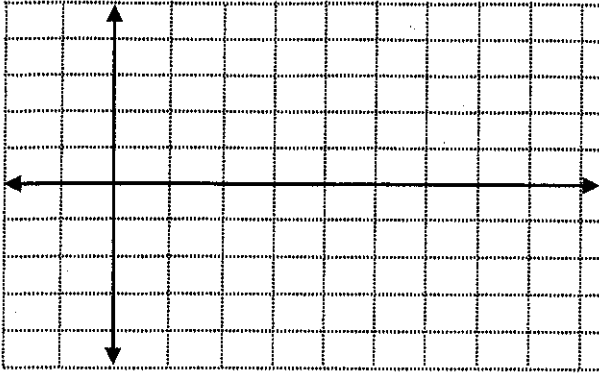
Solve each equation in the interval from 0 to  $2\pi$ . Round to the nearest hundredth.

- |                                       |                                     |                                       |
|---------------------------------------|-------------------------------------|---------------------------------------|
| 23. $2 \cos 3\theta = 1.5$            | 24. $\cot \frac{t}{3} = 1$          | 25. $1.5 \cos \pi\theta = -1.5$       |
| 26. $3 \cos \frac{\pi}{5}\theta = 2$  | 27. $3 \cos t = 2$                  | 28. $0.5 \cos \frac{\theta}{2} = 0.5$ |
| 29. $4 \cos \frac{\pi}{4}\theta = -2$ | 30. $3 \cos \frac{\theta}{4} = 1.5$ | 31. $3 \cos \theta = -3$              |

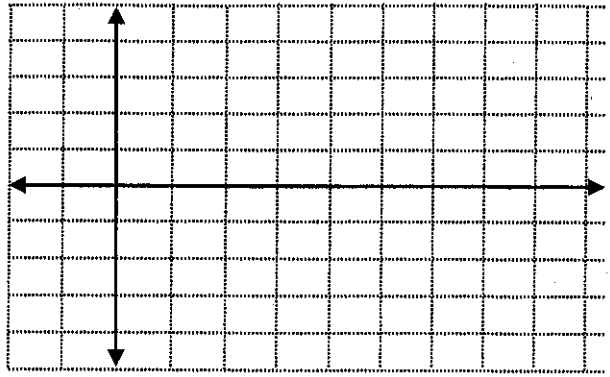
Write a cosine function for each description. Assume that  $a > 0$ .

32. amplitude =  $2\pi$ , period = 1
33. amplitude =  $\frac{1}{2}$ , period =  $\pi$

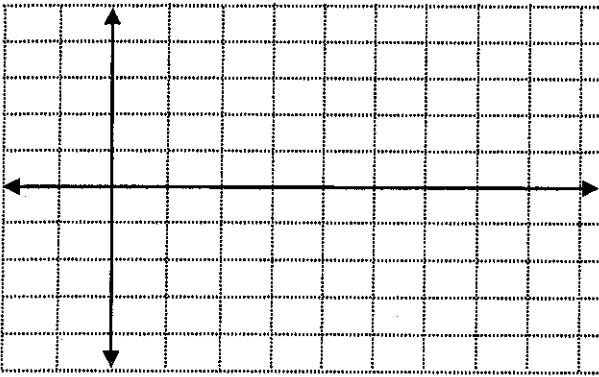
Prob. 8



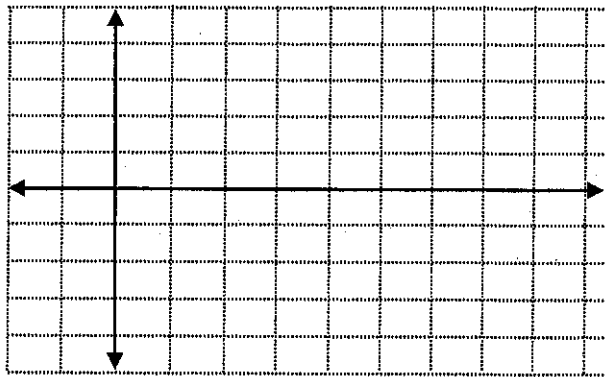
Prob. 10



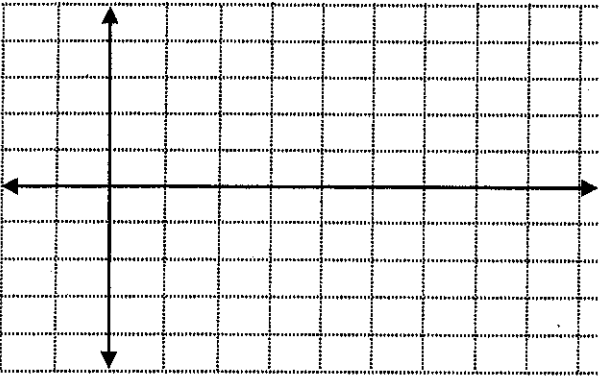
Prob. 12



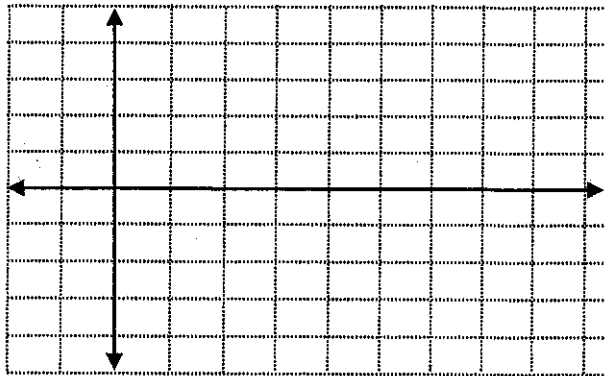
Prob. 14



Prob. 16

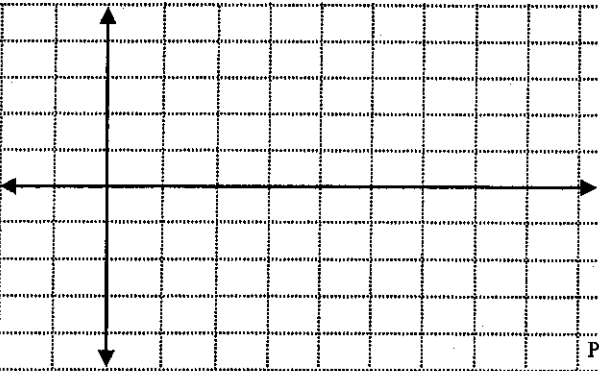


Prob. 18

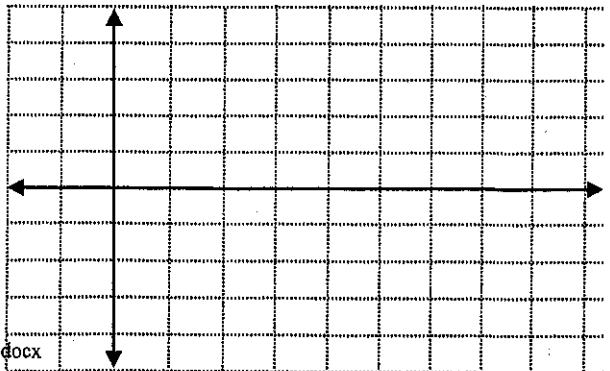


Practice 13.5

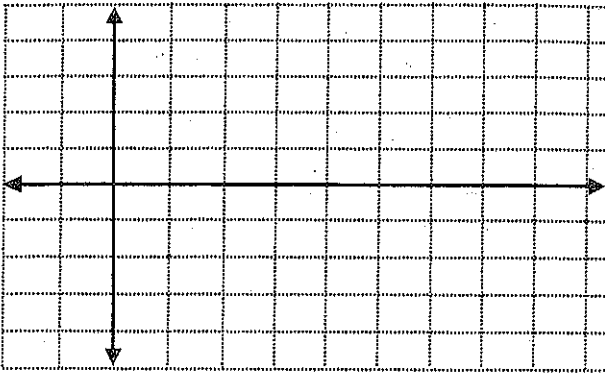
Prob. 20



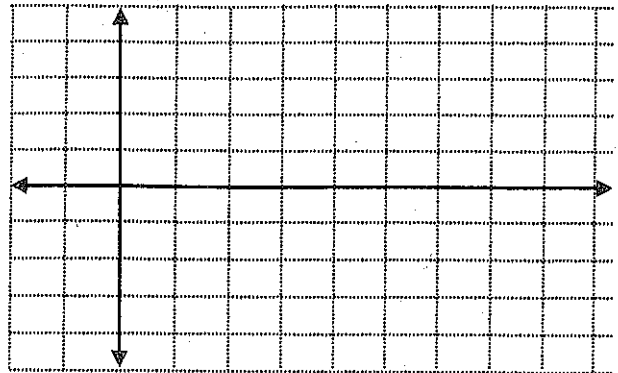
Prob. 2



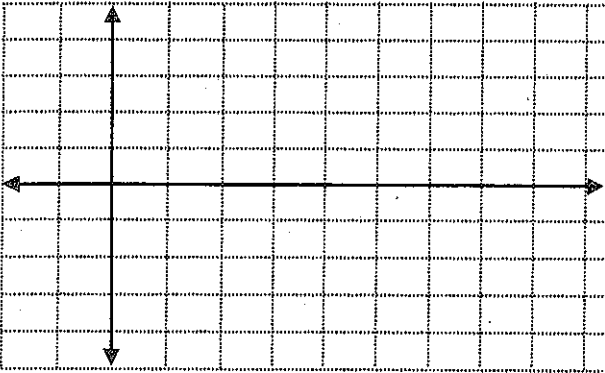
W5.4



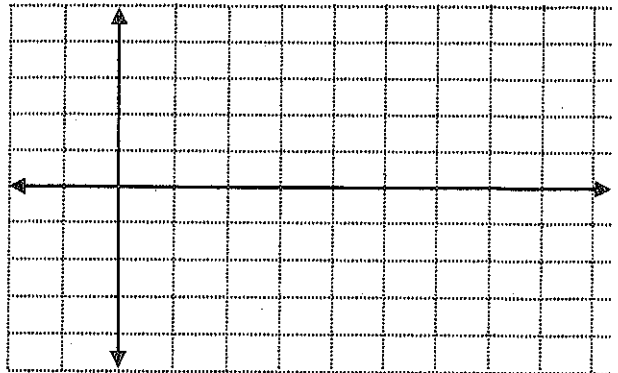
W6.



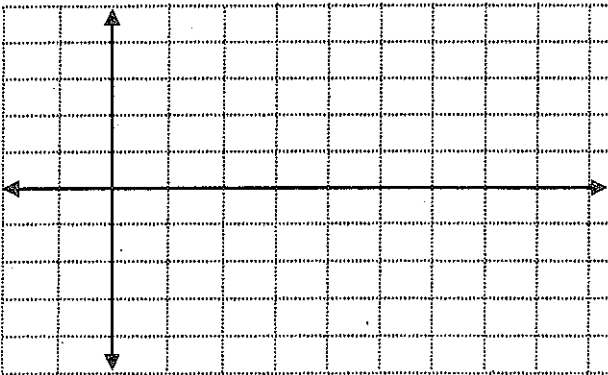
W8



W10



W12



W14

