

10.1 Practice – Graphing Sine and Cosine

Name: _____

Pre-Calculus

For 1-3, identify the amplitude, period, frequency and vertical shift of each function.

1. $f(\theta) = 13 \sin 2\theta - 7$

Amp: $|13| = 13$ Period: $2\pi(\frac{1}{2}) = \pi$

Freq: $\frac{1}{\pi}$ Vert. Shift: -7

2. $g(t) = 5 - 6 \cos(\pi t)$

Amp: $|-6| = 6$ Period: $2\pi \cdot \frac{1}{\pi} = 2$

Freq: $\frac{1}{2}$ Vert. Shift: 5

3. $h(\theta) = -24 \sin(8\pi\theta)$

Amp: $|-24| = 24$ Period: $2\pi(\frac{1}{8\pi}) = \frac{1}{4}$

Freq: 8 Vert. Shift: 0

For 4-15, identify the given information and graph the trig function.

4. $f(\theta) = 3 \sin \theta$

Amp: $|3| = 3$ Period: 2π Freq: $\frac{1}{2\pi}$

5. $y = -\sin 2x$

Amp: $|-1| = 1$ Period: $2\pi(\frac{1}{2}) = \pi$ Freq: $\frac{1}{\pi}$

6. $f(\theta) = 4 \sin \frac{1}{2} \theta$

Amp: $|4| = 4$ Period: $2\pi(2) = 4\pi$ Freq: $\frac{1}{4\pi}$

7. $y = 2 \cos x$

Amp: $|2| = 2$ Period: 2π Freq: $\frac{1}{2\pi}$

8. $f(\theta) = -3 \cos \frac{1}{2} \theta$

Amp: $|-3| = 3$ Period: $2\pi(2) = 4\pi$ Freq: $\frac{1}{4\pi}$

9. $y = -\cos 4x$

Amp: $|-1| = 1$ Period: $2\pi(\frac{1}{4}) = \frac{\pi}{2}$ Freq: $\frac{2}{\pi}$

10. $f(\theta) = -4 \sin \theta$

Amp: $|-4| = 4$ Period: 2π Freq: $\frac{1}{2\pi}$

11. $y = -3 \cos 2x$

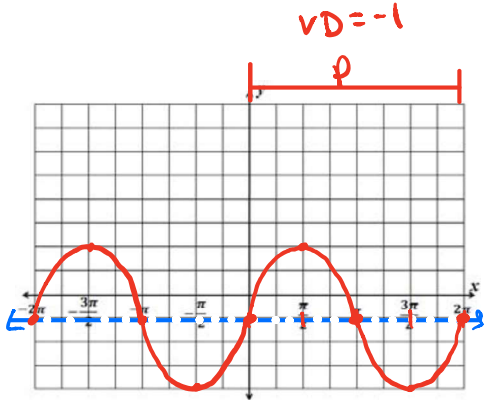
Amp: $|-3| = 3$ Period: $2\pi(\frac{1}{2}) = \pi$ Freq: $\frac{1}{\pi}$

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

Amp: $|2| = 2$ Period: $2\pi(\frac{3}{4}) = \frac{3\pi}{2}$ Freq: $\frac{2}{3\pi}$

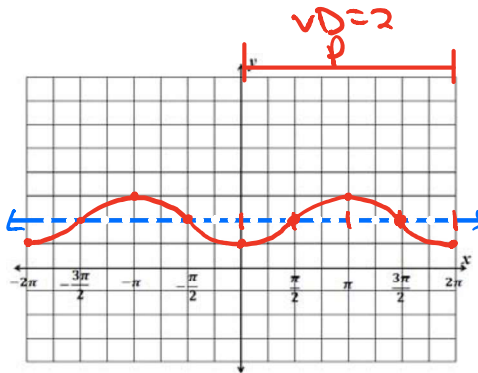
13. $f(\theta) = 3 \sin \theta - 1$

Amp: $|3| = 3$ Period: 2π Freq: $\frac{1}{2\pi}$



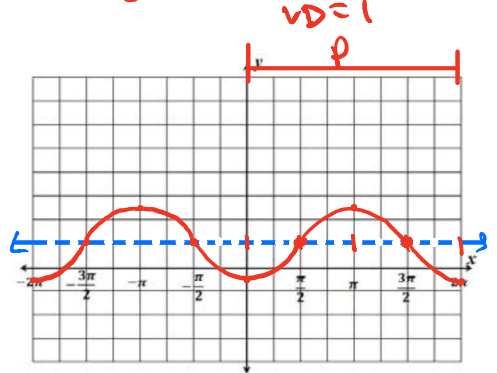
14. $f(t) = -\cos t + 2$

Amp: $|-1| = 1$ Period: 2π Freq: $\frac{1}{2\pi}$



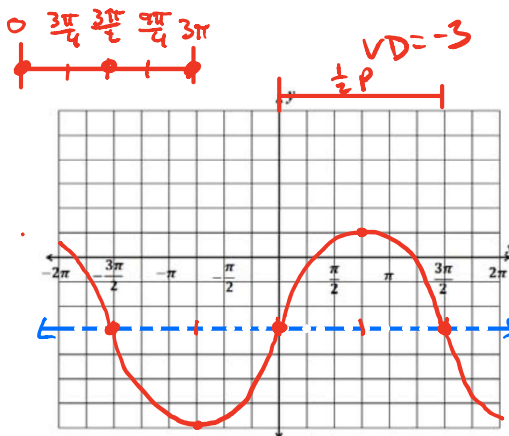
15. $y = 1 - \frac{3}{2} \cos x$

Amp: $|\frac{-3}{2}| = \frac{3}{2}$ Period: 2π Freq: $\frac{1}{2\pi}$



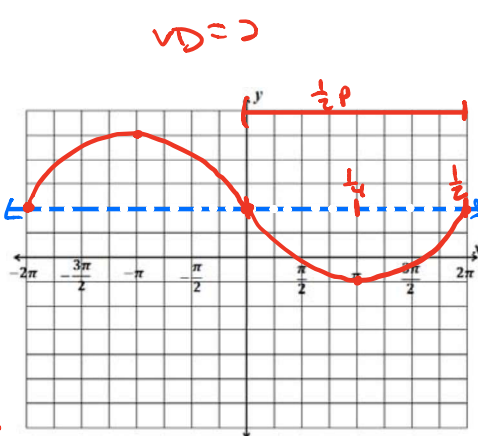
16. $y = -3 + 4 \sin \frac{2}{3} x$

Amp: $|4| = 4$ Period: $2\pi \cdot \frac{3}{2} = 3\pi$ Freq: $\frac{1}{3\pi}$



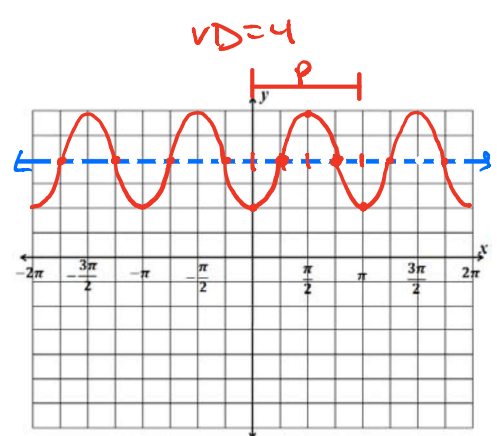
17. $f(\theta) = 2 - 3 \sin \frac{1}{2} \theta$

Amp: $|-3| = 3$ Period: $2\pi \cdot 2 = 4\pi$ Freq: $\frac{1}{4\pi}$



18. $f(t) = -2 \cos 2t + 4$

Amp: $|-2| = 2$ Period: $2\pi \cdot \frac{1}{2} = \pi$ Freq: $\frac{1}{\pi}$



For 19 – 24, use the given information to create a sine function.

19.
Amplitude: 5
Period: 4π
Vertical Shift: down 4

$b = 2\pi \cdot \frac{1}{4\pi}$
 $b = \frac{1}{2}$

$y = \pm 5 \sin \left(\frac{1}{2} x \right) - 4$

20.
Amplitude: 2
Period: $\frac{3\pi}{5}$
Vertical Shift: up 9

$b = 2\pi \cdot \frac{5}{3\pi}$
 $b = \frac{10}{3}$

$y = \pm 2 \sin \left(\frac{10}{3} x \right) + 9$

21.
Amplitude: 1
Period: 4
Vertical Shift: up 1

$b = 2\pi \cdot \frac{1}{4}$
 $b = \frac{\pi}{2}$

$y = \pm \sin \left(\frac{\pi}{2} x \right) + 1$

22.
Amplitude: 6
Period: 3π
Vertical Shift: down 5

$b = 2\pi \cdot \frac{1}{3\pi}$
 $b = \frac{2}{3}$

$y = \pm 6 \sin \left(\frac{2}{3} x \right) - 5$

23.
Amplitude: $\frac{1}{5}$
Period: $\frac{\pi}{10}$
Vertical Shift: up 15

$b = 2\pi \cdot \frac{10}{\pi}$
 $b = 20$

$y = \pm \frac{1}{5} \sin (20x) + 15$

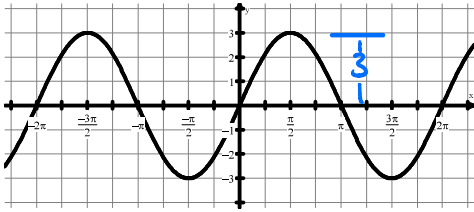
24.
Amplitude: 10
Period: $\frac{5}{6}$
Vertical Shift: down 3

$b = 2\pi \cdot \frac{6}{5}$
 $b = \frac{12\pi}{5}$

$y = \pm 10 \sin \left(\frac{12\pi}{5} x \right) - 3$

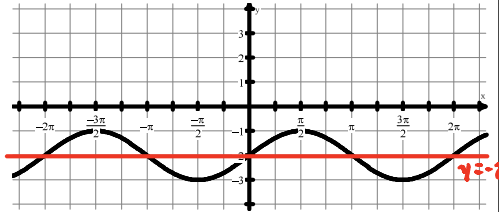
For 25-27, write the equation of the following sine curves.

25.



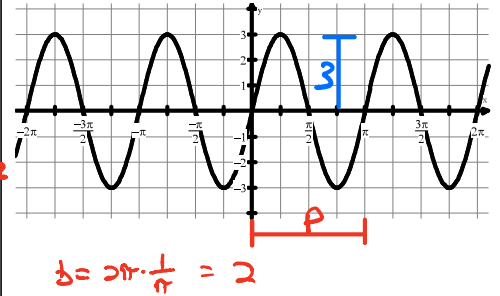
$y = \underline{3 \sin x}$

26.



$y = \underline{\sin x - 2}$

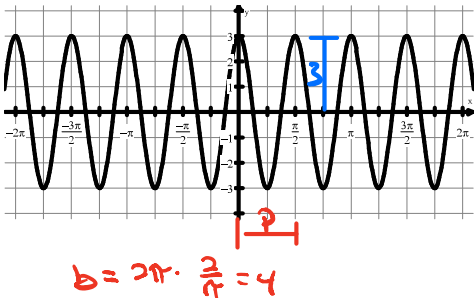
27.



$y = \underline{3 \sin(2x)}$

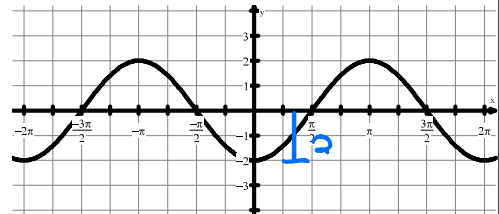
For 28-30, write the equation of the following cosine curves.

28.



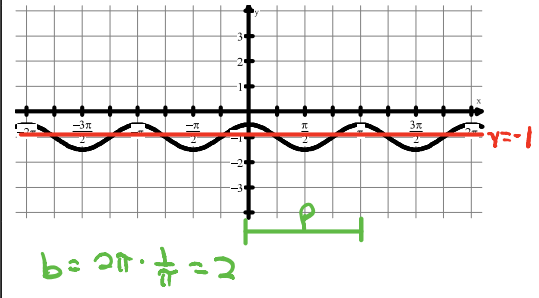
$y = \underline{3 \cos(4x)}$

29.



$y = \underline{-2 \cos x}$

30.



$y = \underline{\frac{1}{2} \cos(2x) - 1}$