

## Graphing Trigonometric Functions

$$y = a \sin(kx)$$

$$y = a \cos(kx)$$

$$k > 0$$

$$\text{Amp} = |a| \text{ and Period } p = \frac{2\pi}{k}$$

$$\text{Interval of One Cycle} = [0, p]$$

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Determine the amplitude, period, interval of one cycle, restricted domain, range, x-intercepts, max value, min value.

1.  $y = 3 \sin(4x)$

2.  $y = 2 \sin(3x)$

3.  $y = -\sin(\pi x)$

4.  $y = -\sin(2\pi x)$

5.  $y = \frac{1}{3} \cos(2\pi x)$

6.  $y = \frac{2}{3} \cos(-\pi x)$

7.  $y = 4 \sin(2x)$

8.  $y = 5 \sin(3x)$

9.  $y = 3 \cos\left(\frac{x}{2}\right)$

10.  $y = 5 \cos\left(\frac{x}{3}\right)$

11.  $y = -2 \sin\left(\frac{x}{4}\right)$

$$12. y = -3\sin\left(\frac{x}{3}\right)$$

$$13. y = -\cos\left(\frac{x}{2}\right)$$

$$14. y = -\cos\left(\frac{x}{3}\right)$$

$$15. y = \sin(4x)$$

$$16. y = \sin(6x)$$

$$17. y = \cos(6x)$$

$$18. y = \cos(4x)$$

What about phase shift (Horizontal Shifting)?

$$y = a\sin[k(x - b)]$$
$$y = a\cos[k(x - b)]$$
$$k > 0$$

$$\text{Amp} = |a| \text{ and Period } p = \frac{2\pi}{k}$$
$$\text{Interval of One Cycle} = [b, b + p]$$
$$\text{Phase Shift } b$$

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Determine the amplitude, period, interval of one cycle, phase shift, restricted domain, range, x-intercepts, max value, min value.

19.  $y = \sin\left(x - \frac{\pi}{4}\right)$

20.  $y = \sin\left(x - \frac{\pi}{3}\right)$

21.  $y = \cos\left(x + \frac{\pi}{3}\right)$

22.  $y = \cos\left(x + \frac{\pi}{4}\right)$

23.  $y = \sin\left[-\left(x + \frac{\pi}{2}\right)\right]$

24.  $y = \sin\left[-\left(x + \frac{\pi}{3}\right)\right]$

25.  $y = 3\cos[2(x - \pi)]$

26.  $y = 2\cos[3(x - \pi)]$

27.  $y = \frac{3}{2}\sin\left[4\left(x + \frac{\pi}{3}\right)\right]$

28.  $y = \frac{2}{5}\sin\left[3\left(x + \frac{\pi}{2}\right)\right]$

$$29. y = -\cos \left[ 2x - \frac{\pi}{3} \right]$$

$$30. y = -\cos \left[ 2x - \frac{\pi}{4} \right]$$

$$31. y = -5\sin \left[ 3x + \frac{\pi}{2} \right]$$

$$32. y = -4\sin \left[ 2x + \frac{\pi}{6} \right]$$

Graphing Secant and Cosecant.

$$33. y = \sec \left( x - \frac{\pi}{4} \right)$$

$$34. y = \sec \left( x - \frac{\pi}{3} \right)$$

$$35. y = \csc \left( x + \frac{\pi}{3} \right)$$

$$36. y = \csc \left( x + \frac{\pi}{4} \right)$$

$$37. y = 2\sec(4x - \pi)$$

$$38. y = -3\sec(2x + \pi)$$

$$39. y = -\csc \left( 2x - \frac{\pi}{3} \right)$$

$$40. y = \frac{2}{5}\csc \left( 4x + \frac{\pi}{2} \right)$$

$$41. y = -\frac{1}{5}\sec \left( 3x + \frac{\pi}{4} \right)$$

$$42. y = 4\csc \left[ \frac{1}{3} \left( x + \frac{\pi}{4} \right) \right]$$

$$43. y = -\frac{2}{7}\csc \left[ \frac{1}{2} \left( x - \frac{\pi}{6} \right) \right]$$

$$44. y = 4\sec \left[ \frac{1}{4} \left( x + \frac{\pi}{4} \right) \right]$$