

2.5 WS Identify Transformations

Fill in the tables.

	Period	Amplitude	Phase shift	Vertical Shift	Range
$y = -2\sin(\frac{1}{5}x - \pi)$	$10\pi$	2	$5\pi$	none	$[-2, 2]$
$y = \frac{1}{3}\cos(\theta + \frac{\pi}{3}) + 3$	$2\pi$	$\frac{1}{3}$	$-\frac{\pi}{3}$	3	$[2\frac{2}{3}, 3\frac{1}{3}]$
$y = \cos(3x - \frac{5\pi}{6}) - \frac{1}{2}$	$\frac{2\pi}{3}$	1	$\frac{5\pi}{18}$	$-\frac{1}{2}$	$[-\frac{3}{2}, \frac{1}{2}]$
$y = 5\cos(\frac{1}{2}x) + 4$	$4\pi$	5	none	4	$[-1, 9]$
$y = -4\sin(2\theta)$	$\pi$	4	none	none	$[-4, 4]$
$y = \frac{1}{2}\cos(\theta + \frac{\pi}{2}) + 3$	$2\pi$	$\frac{1}{2}$	$-\frac{\pi}{2}$	3	$[2\frac{1}{2}, 3\frac{1}{2}]$
$y = -5\sin(\frac{1}{3}x) - \frac{1}{2}$	$6\pi$	5	none	$-\frac{1}{2}$	$[-5\frac{1}{2}, 4\frac{1}{2}]$
$y = \cos(\frac{3}{2}x) + \frac{5}{3}$	$\frac{4\pi}{3}$	1	none	$\frac{5}{3}$	$[\frac{2}{3}, \frac{8}{3}]$

Write the sine equation for each of the following:

Amplitude	Period	Phase shift	Vertical Shift	Equation
2	$\frac{\pi}{2}$	$-\frac{\pi}{4}$	1	$y = 2\sin 4(x + \frac{\pi}{4}) + 1$ or $y = 2\sin(4x + \pi) + 1$
4	$3\pi$	$\frac{\pi}{2}$	-4	$y = 4\sin \frac{2}{3}(x - \frac{\pi}{2}) - 4$ or $y = 4\sin(\frac{2}{3}x - \frac{\pi}{3}) - 4$
1	1	$\frac{\pi}{4}$	2	$y = \sin 2\pi(x - \frac{\pi}{4}) + 2$ or $y = \sin(2\pi x - \frac{\pi^2}{2}) + 2$
3	4	-1	$\frac{1}{2}$	$y = 3\sin \frac{\pi}{2}(x + 1) + \frac{1}{2}$ or $y = 3\sin(\frac{\pi}{2}x + \frac{\pi}{2}) + \frac{1}{2}$

Graph:

$y = 2\sin(4\theta - \frac{3\pi}{2}) + 1$	$y = 4\cos(3\theta - \frac{\pi}{4})$
$y = 2\cos(\frac{\theta}{2} - \frac{5\pi}{3}) + 1$	$y = -2 + 2\sin(4\theta - \frac{2\pi}{3})$
$y = 3\sin(3\theta - \frac{5\pi}{6}) + 2$	$y = -4\sin(3\theta)$
$y = -1 + 4\cos(4\theta - \frac{\pi}{6})$	$y = 2\cos(\frac{\theta}{4} + \frac{\pi}{6})$