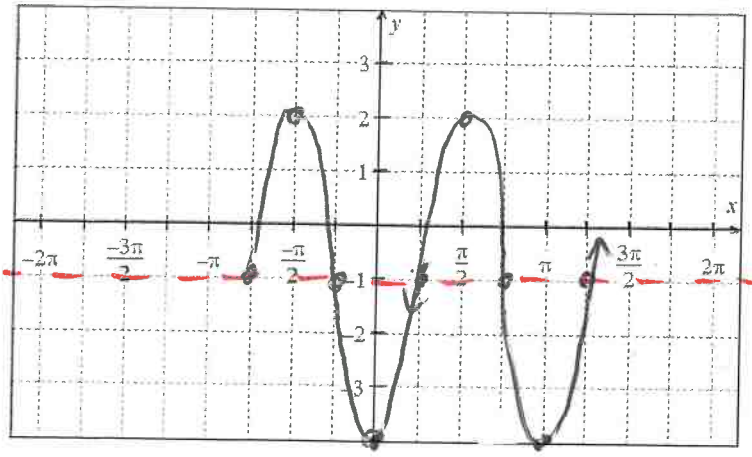
2.07 Key

Pre-Calculus- More Sine and Cosine Graphing Review

1) Graph at least TWO periods of the function, state the amplitude, period, phase shift, and vertical shift. Plot the critical points.

$$y = 3\sin\left(2\theta - \frac{\pi}{2}\right) - 1 \qquad y = 3\sin\left[2\left(\theta - \frac{\pi}{4}\right)\right] - 1$$



Amplitude: 3

Period: π

Intervals: $\pi/4$

Phase Shift: right $\pi/4$

Vertical Shift: down 1

D: $(-\infty, \infty)$ R: $[-4, 2]$

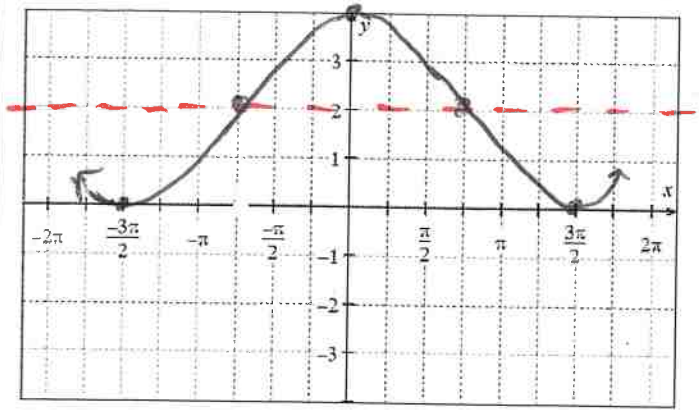
2) Write the equation of the cosine function with amplitude 5, period 7π, phase shift right $\frac{\pi}{2}$, and vertical shift up 3.

$7\pi = \frac{2\pi}{b}$ | $7\pi b = 2\pi$, $b = \frac{2\pi}{7\pi} = \frac{2}{7}$

$y = \pm 5\cos\left[\frac{2}{7}\left(\theta - \frac{\pi}{2}\right)\right] + 3$

3) Graph at least one period of the function, state the amplitude, period, phase shift, and vertical shift. Plot the critical points.

$$y = -2\cos\left(\frac{2\theta}{3} + \pi\right) + 2 \qquad y = -2\cos\left[\frac{2}{3}\left(\theta + \frac{3\pi}{2}\right)\right] + 2$$



Amplitude: 2

Period: 3π

Intervals: $3\pi/4$

Phase Shift: left $3\pi/2$

Vertical Shift: up 2

D: $(-\infty, \infty)$ R: $[0, 4]$

4) Write the equation of the sine function with amplitude 2.4, period $\frac{3\pi}{4}$, phase shift left $\frac{\pi}{2}$, and vertical shift down 6.

$y = \pm 2.4\sin\left[\frac{8}{3}\left(\theta + \frac{\pi}{2}\right)\right] - 6$

$\frac{3\pi}{4} = \frac{2\pi}{b}$ | $3\pi b = 8\pi$, $b = \frac{8\pi}{3\pi} \rightarrow b = \frac{8}{3}$

2.07 key

Sine & Cosine Graphing Review

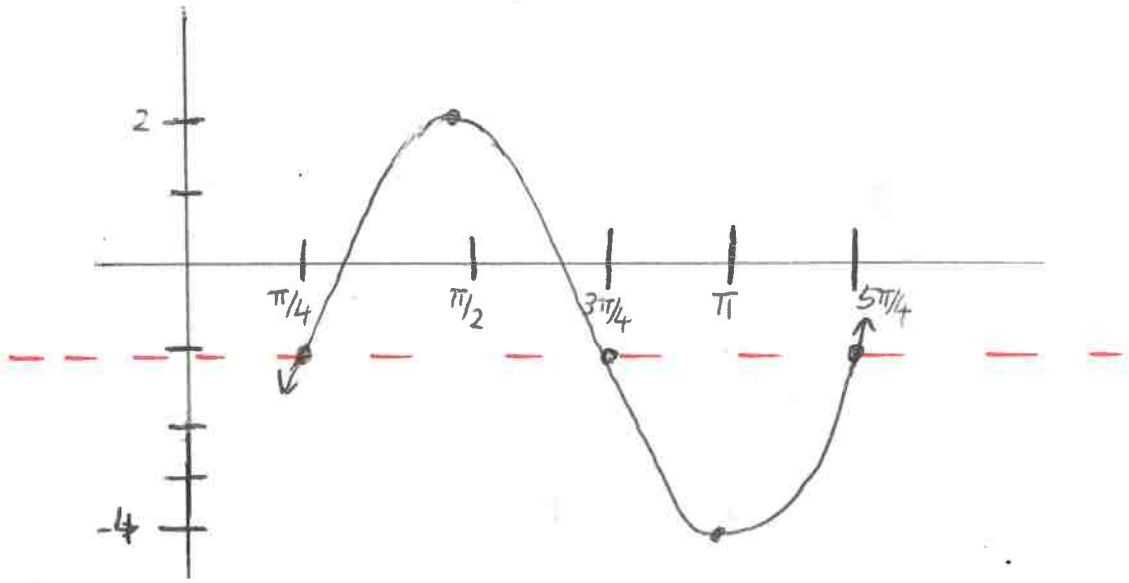
1) $y = 3\sin\left(2\theta - \frac{\pi}{2}\right) - 1$

$y = 3\sin\left[2\left(\theta - \frac{\pi}{4}\right)\right] - 1$

period $= \frac{2\pi}{b} \rightarrow \frac{2\pi}{2} = \pi$ Interval $= \frac{\pi}{4}$

PS right $\pi/4$ VS down 1

	$\pi/4$	$\pi/2$	$3\pi/4$	π	$5\pi/4$
θ	$0 + \pi/4$	$\pi/4 + \pi/4$	$\pi/2 + \pi/4$	$3\pi/4 + \pi/4$	$\pi + \pi/4$
$\sin(2\theta)$	0	1	0	-1	0
$3\sin(2\theta)$	0	3	0	-3	0

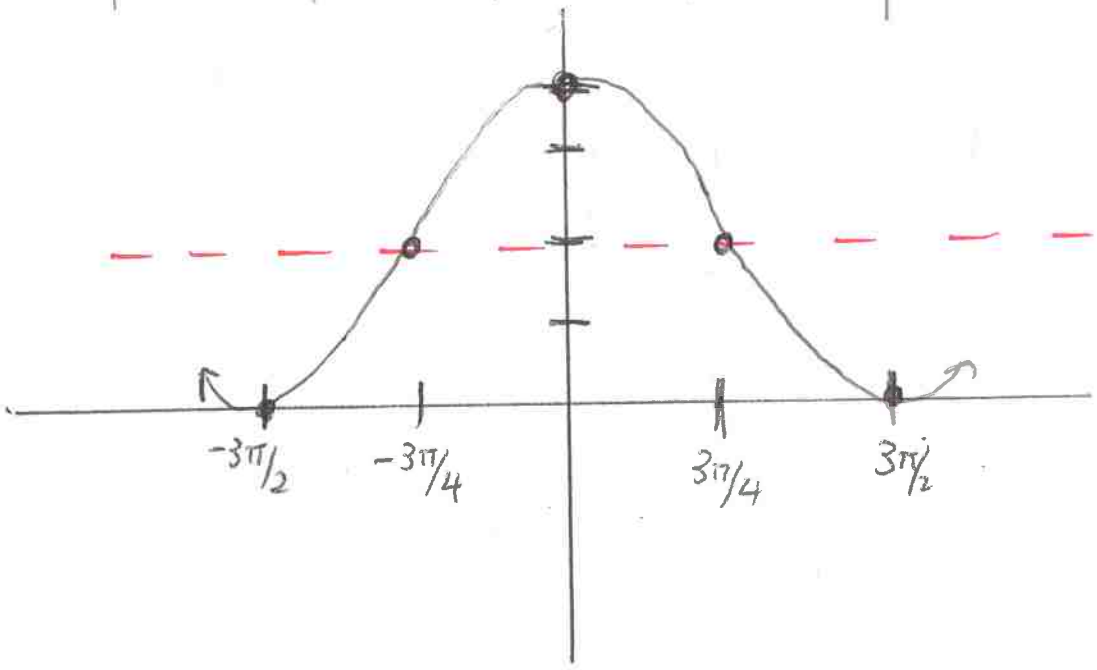


3) $y = -2\cos\left(\frac{2\theta}{3} + \pi\right) + 2$

$y = -2\cos\left[\frac{2}{3}\left(\theta + \frac{3}{2}\pi\right)\right] + 2$

period $= \frac{2\pi}{2/3} \rightarrow 2\pi \cdot \frac{3}{2} = 3\pi$ $\quad I = \frac{3\pi}{4}$ $\quad$ PS left $\frac{3\pi}{2}$ VS up 2

θ	$-\frac{3\pi}{2}$ $0 - \frac{3\pi}{2}$	$-\frac{3\pi}{4}$ $\frac{3\pi}{4} - \frac{6\pi}{4}$	0 $\frac{6\pi}{4} - \frac{6\pi}{4}$	$\frac{3\pi}{4}$ $\frac{9\pi}{4} - \frac{6\pi}{4}$	$\frac{3\pi}{2}$ $\frac{12\pi}{4} - \frac{6\pi}{4}$
$\cos\left(\frac{2\theta}{3}\right)$	1	0	−1	0	1
$-2\cos\left(\frac{2\theta}{3}\right)$	−2	0	2	0	−2

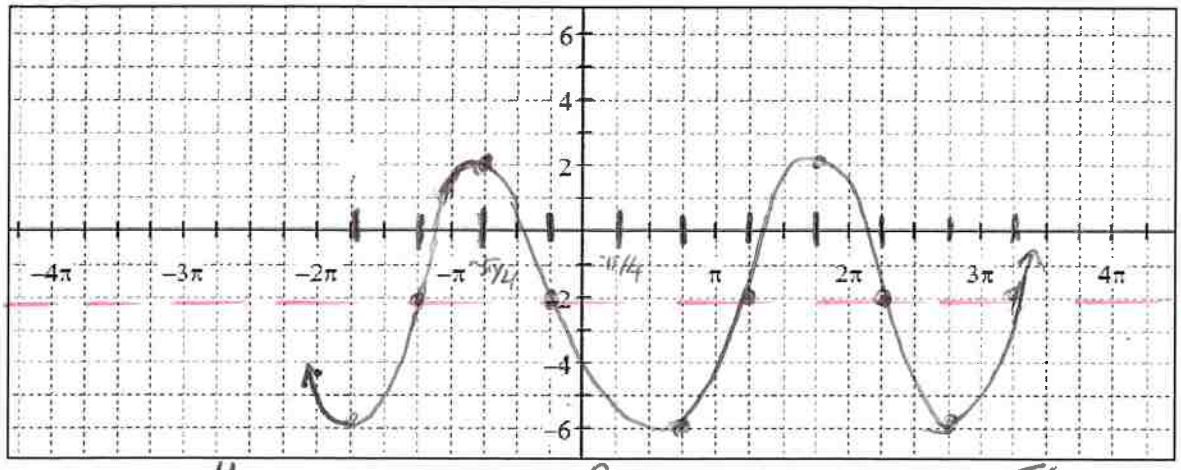


5)

Graph at least TWO periods of the function, state the amplitude, period, phase shift, and vertical shift. Plot the critical points.

$$y = 4\cos\left(\theta + \frac{3\pi}{4}\right) - 2$$

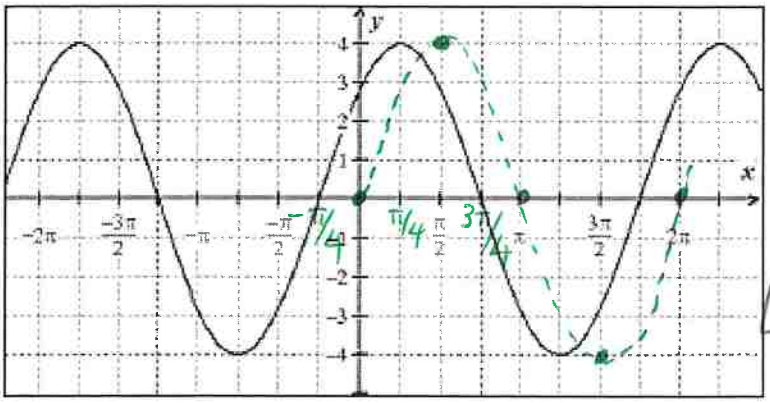
D $(-\infty, \infty)$
R $[-6, 2]$



Amplitude: 4 Period: 2π Intervals: $\pi/2$

Phase Shift: left $3\pi/4$ Vertical Shift: down 2

6)



Use the graph to write the equation of the sine function.

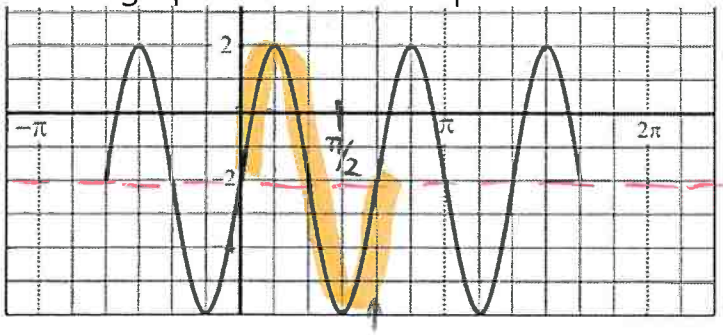
$a = 4$ $b = 1$ $c = \pi/4$ (left) $d = 0$

$y = 4\sin(\theta + \pi/4)$

y = _____

7)

Use the graph to write the equation of the sine function.



$a = 4$ $b = 3$ $c = 0$ $d = -2$

period $= \frac{2\pi}{3}$

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

$2\pi b = 6\pi$

$b = \frac{6\pi}{2\pi} = 3$

$y = 4\sin(3\theta) - 2$

y = _____

5) $y = 4\cos\left(\theta + \frac{3\pi}{4}\right) - 2$

$a = 4 \quad c = -3\pi/4$ P.S. left $3\pi/4$ VS down 2

$b = 1 \quad d = -2$

θ	$0 - 3\pi/4$	$\pi/2 - 3\pi/4$	$\pi - 3\pi/4$	$3\pi/2 - 3\pi/4$	$2\pi - 3\pi/4$
	$-\frac{3\pi}{4}$	$-\frac{\pi}{4}$	$\frac{\pi}{4}$	$\frac{3\pi}{4}$	$\frac{5\pi}{4}$
$\cos(\theta)$	1	0	-1	0	1
$4\cos\theta$	4	0	-4	0	4