

QUIZ 5.1 - 5.2

1. For each of the following trigonometric functions, state the amplitude and the period in degrees and radians.

a) $y = 2 \cos \theta$

- amplitude: 2
- period: 360° or 2π

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

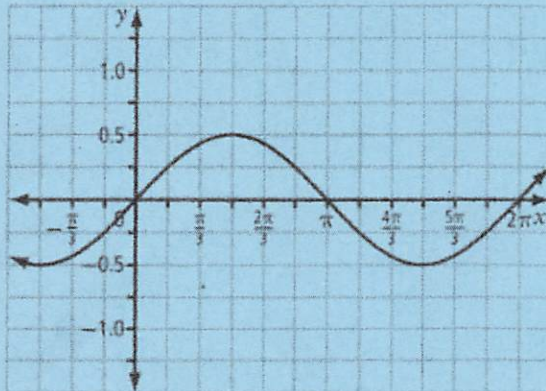
- amplitude: 3
- period: 720° or 4π

c) $y = 0.25 \sin(0.25\theta)$

- amplitude: 0.25
- period: 1440° or 8π

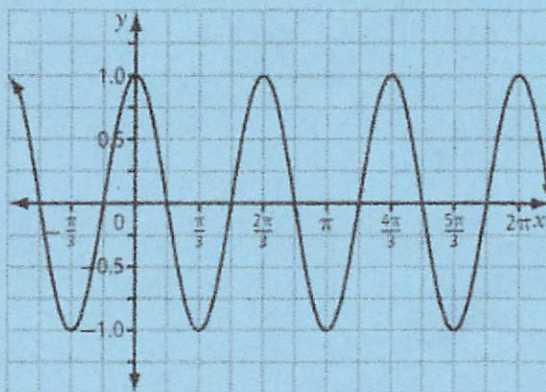
2. State the period in radians, and the amplitude of each trigonometric function.

a)



period: 2π
amplitude: 0.5

b)



period: $\frac{2\pi}{3}$
amplitude: 1

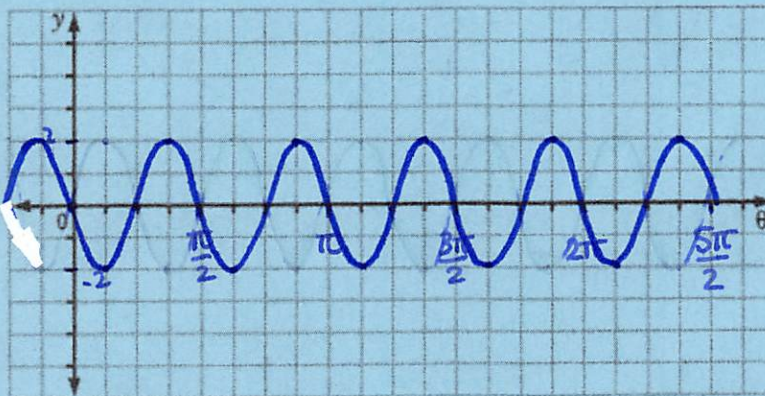
6.5

3. Identify the key features (amplitude, max, min, period, y-intercept, θ -intercepts) of the 2 functions, and graph at least 2 cycles of $y = -2 \sin(4\theta)$.

a)

[7]

	$y = \sin \theta$	$y = -2 \sin(4\theta)$
Amplitude	1	2
max	1	2
min	-1	-2
period	2π	$\frac{\pi}{2}$
y-intercept	0	0
θ -intercepts	$\theta = 0 + k\pi, k \in \mathbb{I}$	$\theta = 0 + k\frac{\pi}{4}, k \in \mathbb{I}$



[2]

b)

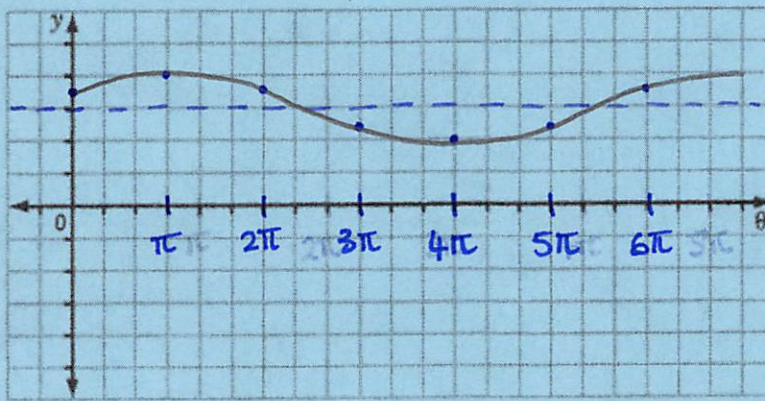
[7]

	$y = \cos \theta$	$y = 2 \cos\left(\frac{1}{2}\theta\right)$
Amplitude	1	2
max	1	2
min	-1	-2
period	2π	4π
y-intercept	1	2
θ -intercepts	$\theta = \frac{\pi}{2} + k\pi, k \in \mathbb{I}$	$\theta = \pi + 2k\pi, k \in \mathbb{I}$

4. Determine the key features of each function, and then graph $y = \cos\left(\frac{1}{3}(\theta - \pi)\right) + 3$:

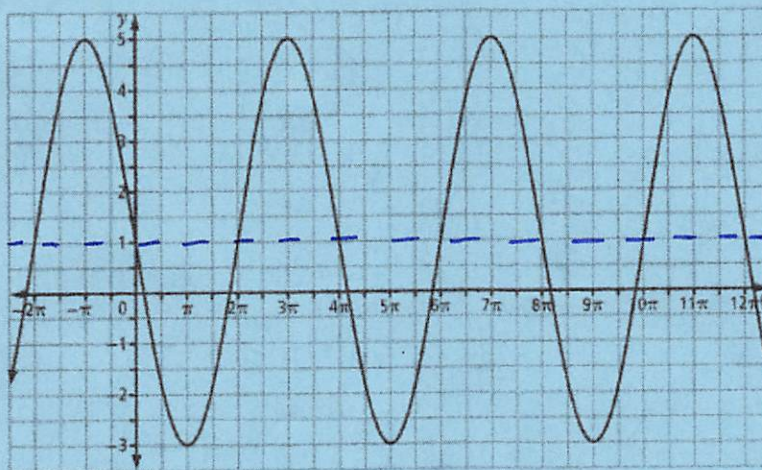
	$y = -5 \sin\left(\frac{1}{2}(\theta - 90^\circ)\right) + 15$	$y = \cos\left(\frac{1}{3}(\theta - \pi)\right) + 3$
amplitude	5	1
period	720°	6π
Phase shift	90°	π
Vertical displacement	15	3
domain	$\{\theta \mid \theta \in \mathbb{R}\}$	$\{\theta \mid \theta \in \mathbb{R}\}$
range	$\{y \mid 10 \leq y \leq 20, y \in \mathbb{R}\}$	$\{y \mid 2 \leq y \leq 4, y \in \mathbb{R}\}$

[7]



[2]

5. Write an equation of the form $y = a \sin(b(\theta - h)) + k$ for the function graphed below.



$$y = -4 \sin\left(\frac{1}{2}\theta\right) + 1$$

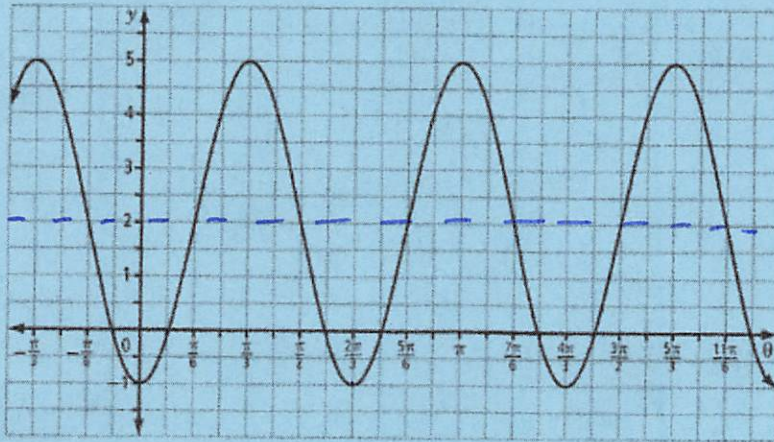
or

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

[3]

$$k=1 \quad a=-4 \quad b=\frac{1}{2}$$

6. Write an equation of the form $y = a \cos(b(\theta - h)) + k$ for the function graphed below.



[3]

$$k = 2 \quad a = -3 \quad \text{period: } \frac{2\pi}{3}$$

$$b = 3$$

$$y = -3 \cos(3\theta) + 2$$