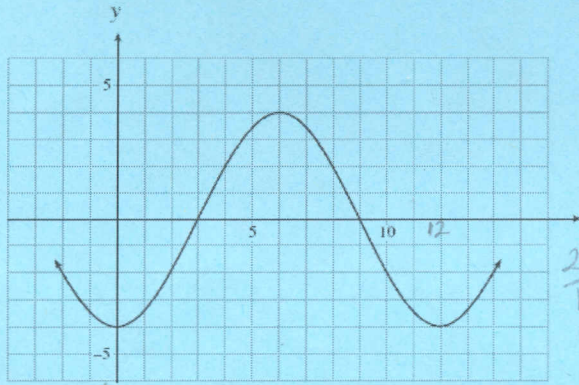


**GRAPHING SINE AND COSINE FUNCTIONS QUIZ**

1. Determine the amplitude of  $y = -2\cos x - 3$

- (a) -3                      (b) -2                      (c) 2                      (d) 3

2. Given the graph below, determine an equation of this function.



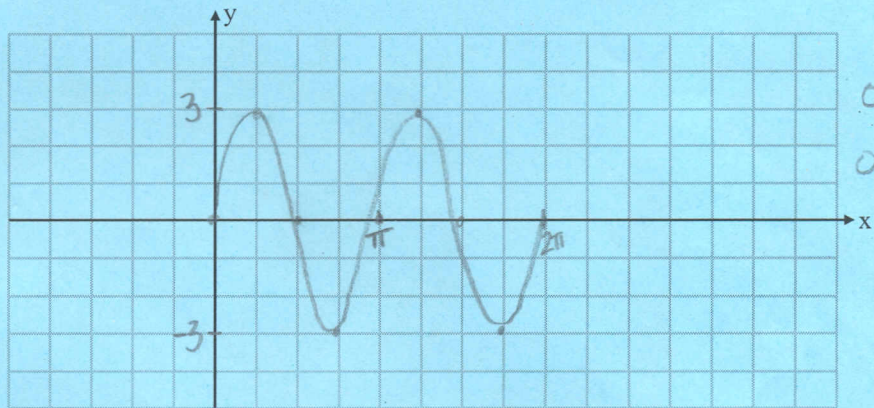
$\frac{2\pi}{b} = 12$   
 $b = \frac{2\pi}{12}$

- (a)  $y = -4\cos \frac{\pi}{6}x$   
 (b)  $y = 4\cos \frac{\pi}{6}x$   
 (c)  $y = -4\cos \frac{\pi}{12}x$   
 (d)  $y = 4\cos \frac{\pi}{12}x$

3. List the vertical shift, amplitude, phase shift and period for each function, and sketch the graph, setting the vertical scale and the horizontal scale.

(a)  $y = 3\sin(2\theta)$

- vertical shift: 0  
 amplitude: 3  
 phase shift: 0  
 period:  $\pi$

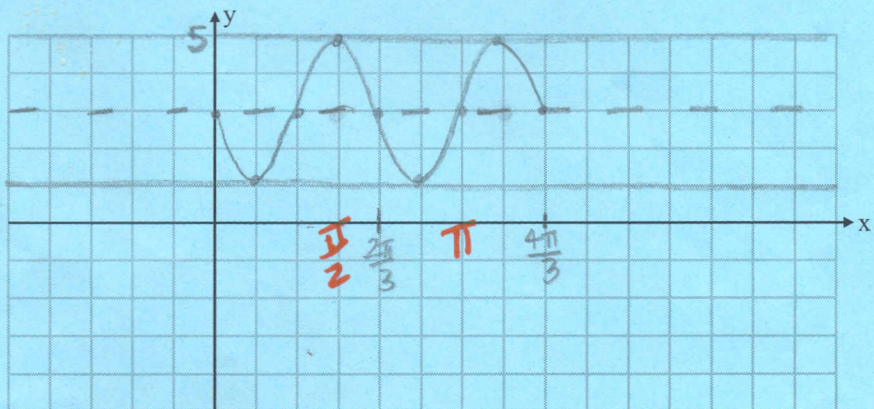


0.5 V.S.  
 0.5 H.S.

marking scheme:  
 0-1 correct → 0  
 2-3 correct → 0.5  
 4 correct → 1

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

- vertical shift: 3  
 amplitude: 2  
 phase shift:  $\frac{\pi}{2} = 3\pi/6$   
 period:  $\frac{2\pi}{3} = 4\pi/6$



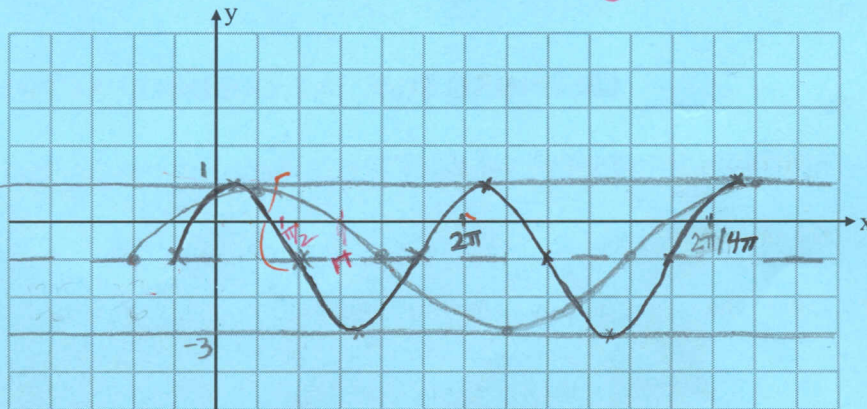
intervals:  $\frac{2\pi/3}{4} = \frac{\pi}{6}$

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

vertical shift:  $-1$   
 amplitude:  $2$   
 phase shift:  $-\frac{\pi}{3} = -\frac{2\pi}{6}$   
 period:  $2\pi$

intervals:  $\frac{2\pi}{4} = \frac{\pi}{2} = \frac{3\pi}{6}$

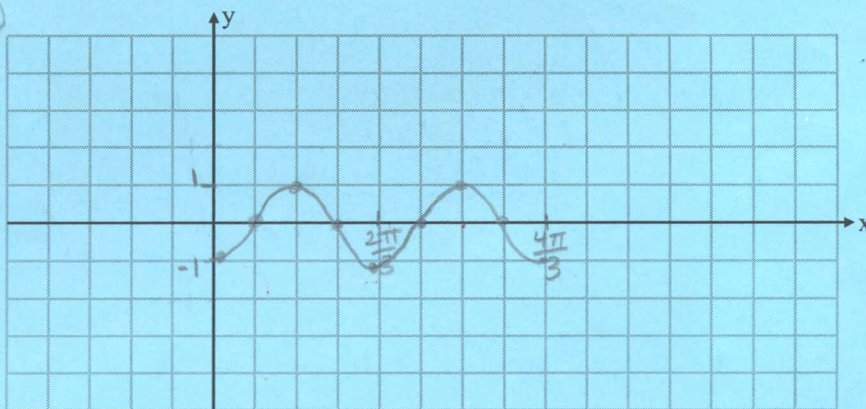
OR last point:  $-\frac{\pi}{3} + 2\pi = \frac{5\pi}{3}$



(d)  $y = \sin(3\theta - \frac{\pi}{2}) = \sin(3(\theta - \frac{\pi}{6}))$

vertical shift:  $0$   
 amplitude:  $1$   
 phase shift:  $\frac{\pi}{6}$   
 period:  $\frac{2\pi}{3} = 4\pi/6$

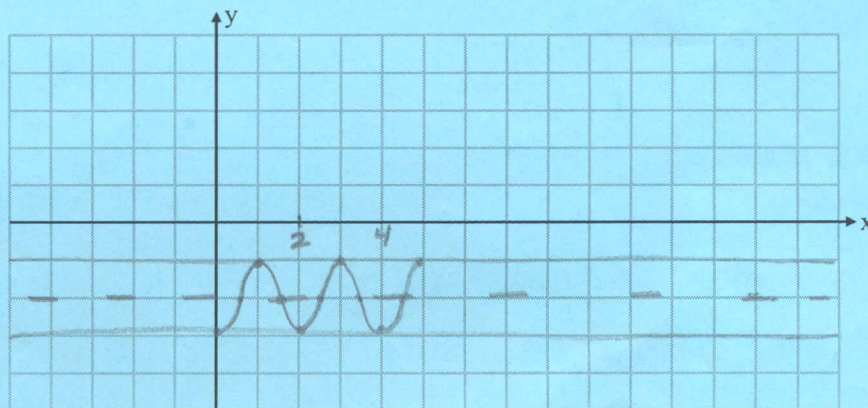
intervals:  $\frac{2\pi}{3} \div 4 = \frac{2\pi}{12} = \frac{\pi}{6}$



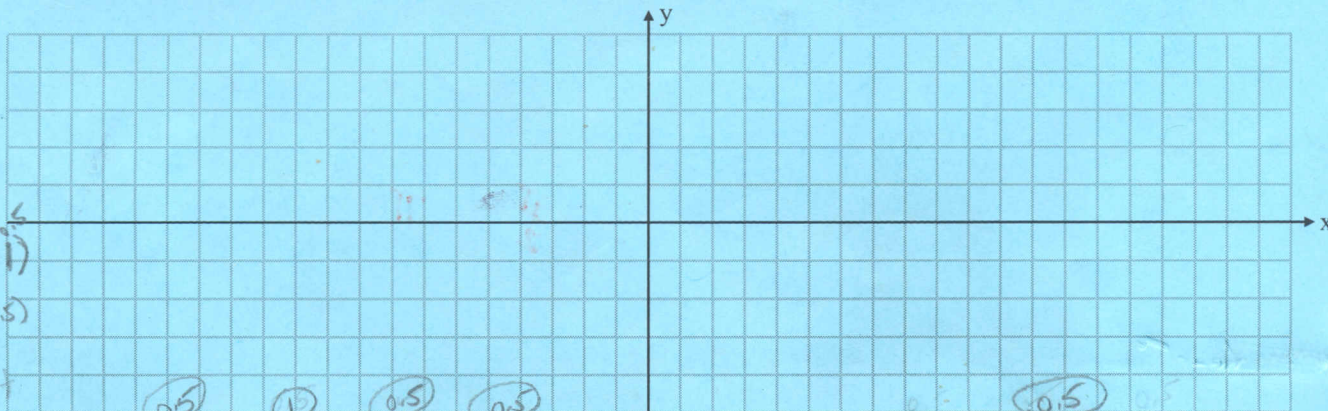
(e)  $y = \cos\pi(t - 1) - 2$

vertical shift:  $-2$   
 amplitude:  $1$   
 phase shift:  $1$   
 period:  $2$

intervals:  $\frac{2}{4} = \frac{1}{2}$



4. The following graph represents a COSINE function. State 2 possible COSINE equations.



(a)  $2\cos 2(\theta + \frac{\pi}{4}) - 1$

(b)  $2\cos 2(\theta - \frac{3\pi}{4}) - 1$

Period:  $\frac{1\pi}{8} - \frac{6\pi}{8} = \frac{8\pi}{8} = \pi$   
 $\frac{2\pi}{b} = \pi$   $b = 2$

$2\cos 2(\theta + \frac{5\pi}{4}) - 1$   
 $2\cos 2(\theta + \frac{9\pi}{4}) - 1$

$-\cos 2(\theta - \frac{\pi}{4}) - 1$