MCF3M

Unit 3 Review

1. Fill in the blanks by finding another angle between 0 and 360° to make each equation true.

   a) sin 50° = sin _____ b) cos 30° = cos _____ c) tan 40° = tan _____

   d) sin 200° = sin _____ e) cos 110° = - cos _____

2. Find 2 values for θ (both between 0 and 360°) that make each equation true. (round to the nearest degree)

   a) $\sin\theta = \frac{1}{2}$ b) $\cos\theta = -0.707$ c) $\tan\theta = 1$ d) $\cos\theta = 0$

3. Graph the following for at least once cycle.

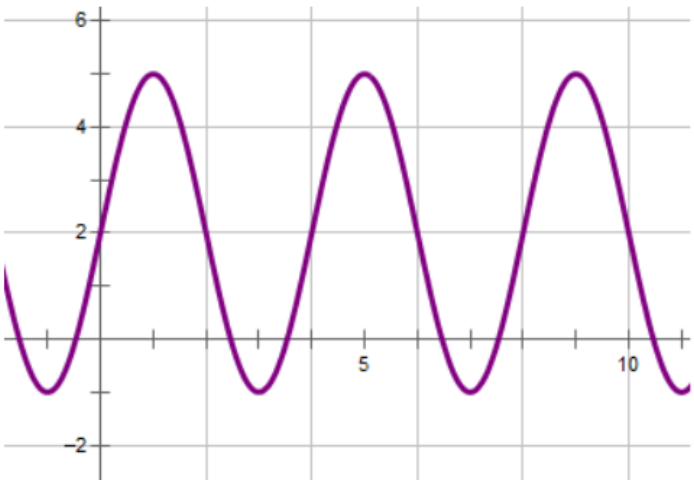
   a) $y = 5\sin[3x] - 3$ b) $f(x) = -2\sin[6x] + 5$ c) $y = 10\cos(36x) + 20$

4. Complete the following table:

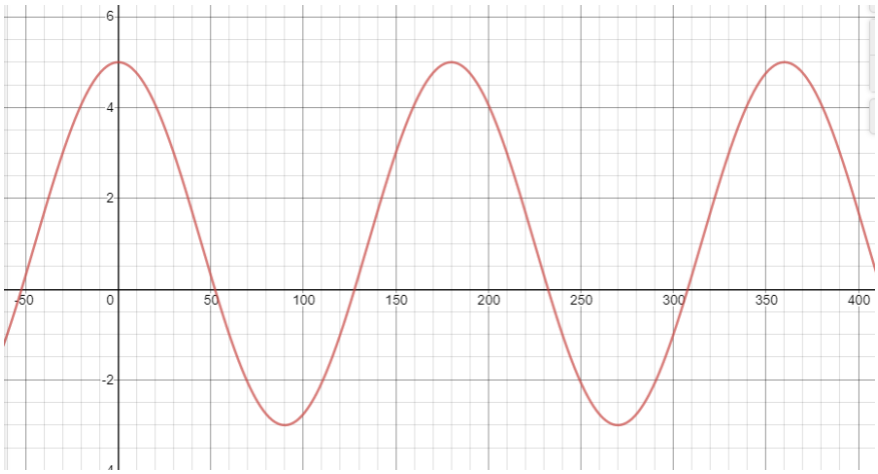
Equation	Amplitude	Equation of Axis	Period	Range
$f(x) = 10\sin 3x$				
$y = -3\cos 10x + 8$				
$g(x) = -\sin x + 8$				

5. Find the equation of each curve below.

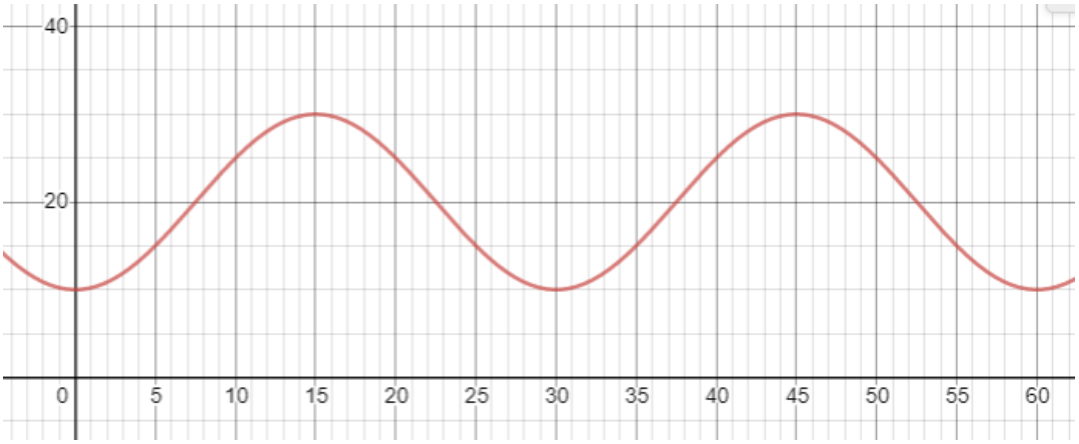
   a)



b)



c)



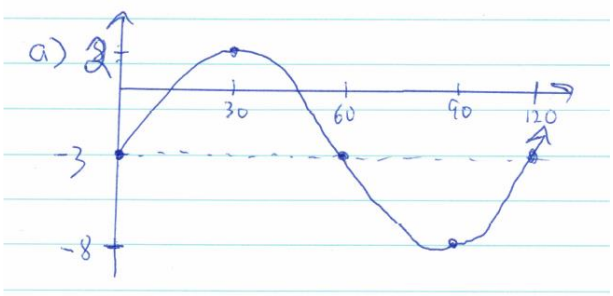
6. The tides in the Bay of Fundy are periodic and have a 12 hour period. In one particular harbor the high tide occur 3 hours after midnight (3:00AM) when the water level is 12 m. The low tide occurs 9 hours after midnight (9:00AM) when the water level is 4 m. Find an equation that models the water level in the harbor given the time (in hours after midnight). (You may wish to sketch a graph to help you answer this question, notice if you follow the pattern, you can see what the water level is at midnight or hour zero).

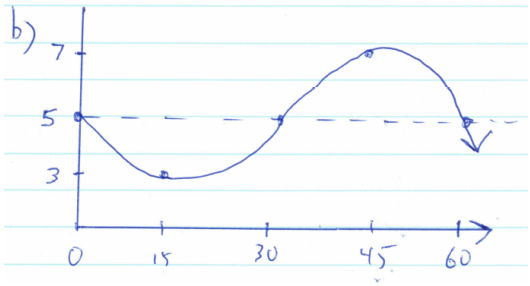
ANSWERS

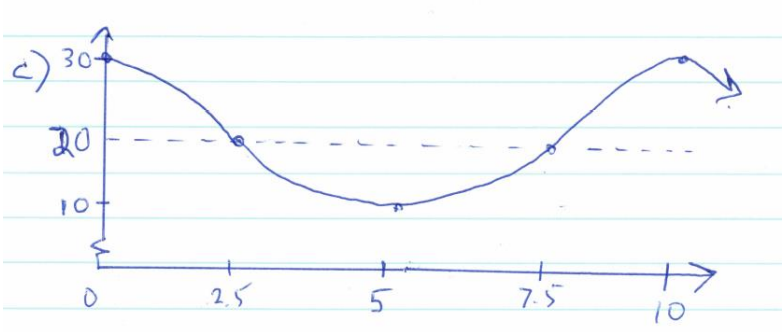
1. a) 130 b) 330 c) 220 d) 340 e) 70 or 290

2. a) 30° or 150° b) 135° or 225° c) 45° or 225° d) 90° or 270°

3.







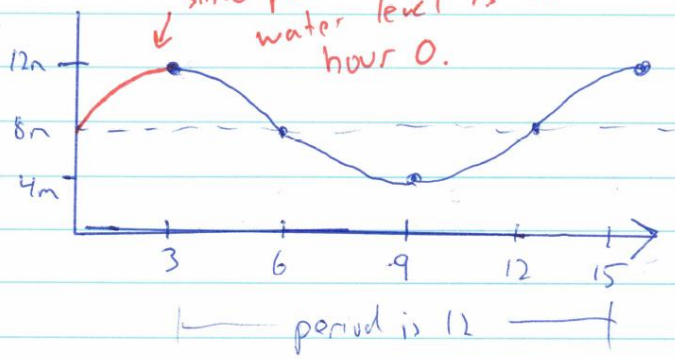
4.

Equation	Amplitude	Equation of Axis	Period	Range
$f(x) = 10\sin 3x$	10	y=0	120	$\{f(x)\epsilon R \mid -10 \leq f(x) \leq 10\}$
$y = -3\cos 10x + 8$	3	y=8	36	$\{y\epsilon R \mid 5 \leq y \leq 11\}$
$g(x) = -\sin x + 8$	1	y= 8	360	$\{y\epsilon R \mid 7 \leq y \leq 9\}$

5. a) y = 3 sin(90x) + 2 b) y = 4 cos 2x + 1 c) y = -10 cos(12x) + 20

6.

6. sketch



amp. = 4

axis at $y = 8$

$k = \frac{360}{12} = 30$

equation: $D(t) = 4\sin(30t) + 8$