

**SEND - IN ASSIGNMENT****UNIT 5****CIRCULAR FUNCTIONS**

Name: \_\_\_\_\_

Teacher: \_\_\_\_\_

If you are cross enrolled, state your other school besides DESK.

\_\_\_\_\_

Date that you submitted this assignment:

\_\_\_\_\_

- Show ALL your work to receive full marks.

**Total** \_\_\_\_\_ = \_\_\_\_\_ %  
**50**

**All answers rounded to 2 decimal places unless otherwise stated.  
Show all work.**

1. Convert  $268^\circ$  to radians. Express the angle to 2 decimal places.

1. \_\_\_\_\_  
*1 mark*

2. Convert  $155^\circ$  to radians. Answer in terms of  $\pi$ .

2. \_\_\_\_\_  
*1 mark*

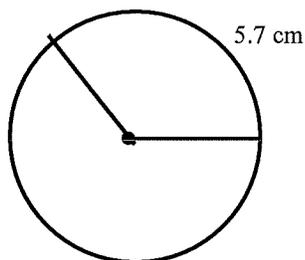
3. Convert 5.2 radians to degrees. Answer to the nearest degree.

3. \_\_\_\_\_  
*1 mark*

4. Convert  $\frac{5\pi}{6}$  radians to degrees. Answer to the nearest degree.

4. \_\_\_\_\_  
*1 mark*

5. A circle has an arc length of 5.7 cm. Calculate the length of the radius subtended by an angle of  $123^\circ$ .

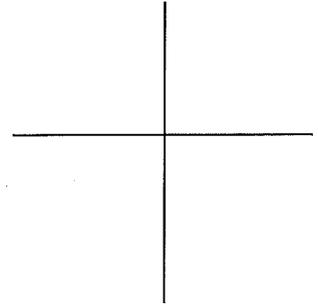


5. \_\_\_\_\_  
*2 marks*

6. On the grid provided draw the angle  $\frac{11\pi}{6}$  in Standard Position.

a) Determine an angle that is co-terminal to  $\frac{11\pi}{6}$

b) Determine the reference angle for  $\frac{11\pi}{6}$ .



1 mark

a) co-terminal \_\_\_\_\_  
1 mark

b) reference \_\_\_\_\_  
1 mark

7. If angle  $\theta$  lies in Quadrant IV and  $\sin \theta = -\frac{7}{25}$  Determine a possible coordinate for point P on the terminal arm of angle  $\theta$ .

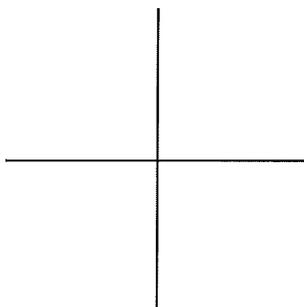
7. \_\_\_\_\_  
2 marks

8. Determine the Quadrant in which angle  $\theta$  is located if  $\sin \theta < 0$  and  $\tan \theta > 0$ .

8. \_\_\_\_\_  
1 mark

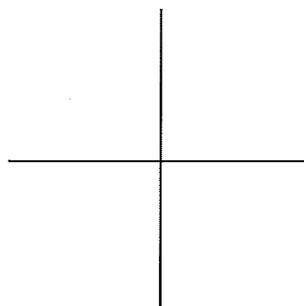
9. Determine the exact value of the following. Use the graph and show all work:

a)  $\cot \frac{5\pi}{6}$



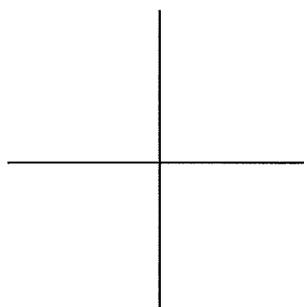
a) \_\_\_\_\_  
2 marks

b)  $\cos\left(-\frac{5\pi}{4}\right)$



b) \_\_\_\_\_  
2 marks

c)  $\sec \frac{5\pi}{3}$



c) \_\_\_\_\_  
2 marks

10. Determine the period of each function:

a)  $y = \cos \frac{3\pi}{5} x$

a) \_\_\_\_\_  
1 mark

b)  $y = \tan \frac{5\pi}{3} x$

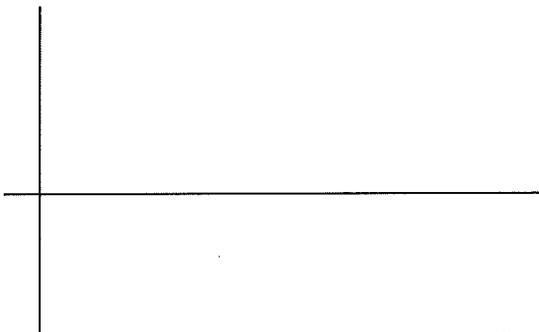
b) \_\_\_\_\_  
1 mark

c)  $y = \sin \frac{3}{2} x$

c) \_\_\_\_\_  
1 mark

11. Draw a quick sketch of the function. Determine the domain and range of the function:

$y = 4 \sin 2(x - 5) - 3$



1 mark

Domain: \_\_\_\_\_  
1 mark

Range: \_\_\_\_\_  
1 mark

12. Given the function:  $y = -3 \cos \left( 2x + \frac{\pi}{3} \right) + 5$ , determine the amplitude, period, phase shift (indicate which direction for phase shift), and vertical displacement. (1 mark each)

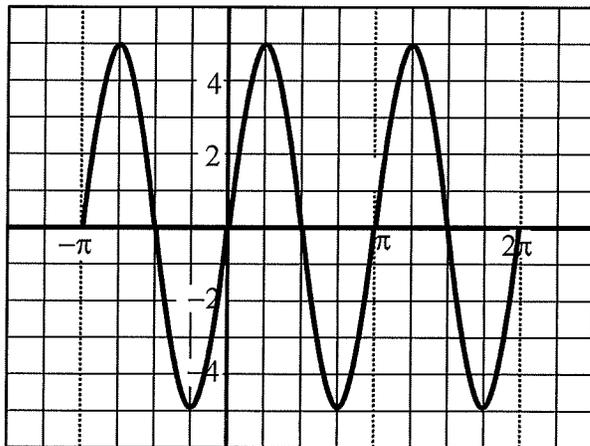
amplitude: \_\_\_\_\_

period: \_\_\_\_\_

phase shift: \_\_\_\_\_

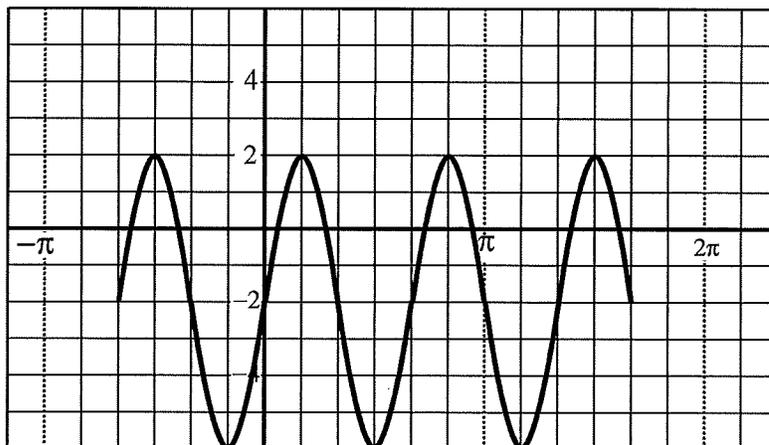
vertical displacement: \_\_\_\_\_

13. Find the equation of the sine function graphed below.



13. \_\_\_\_\_  
2 marks

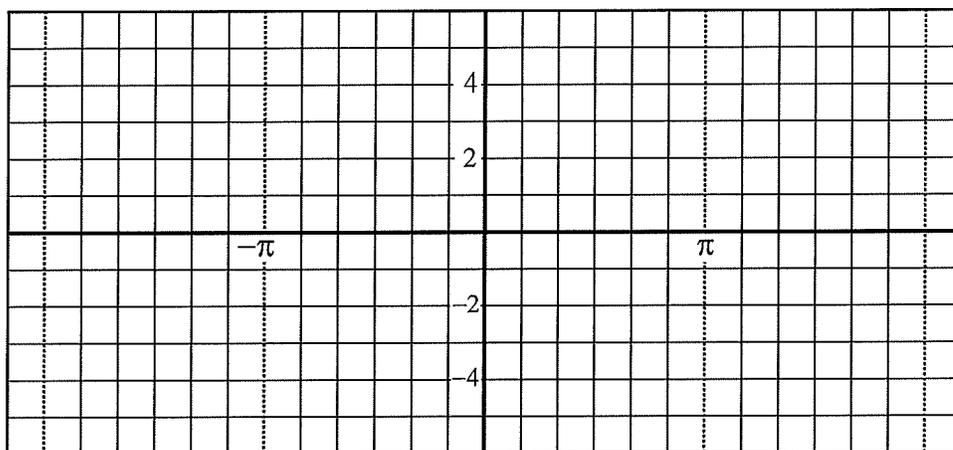
14. Write a **cosine** function for the graph below. Assume the least possible phase shift.



14. \_\_\_\_\_  
3 marks

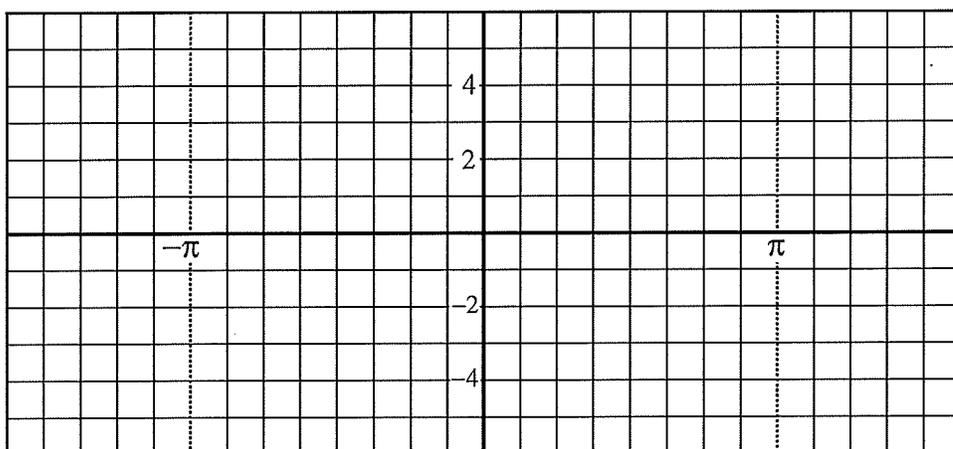
15. Graph at least 2 periods for each function on the graph. SHOW your work for full marks.

a)  $y = 3 \sin\left(x + \frac{\pi}{3}\right) - 1$



3 marks

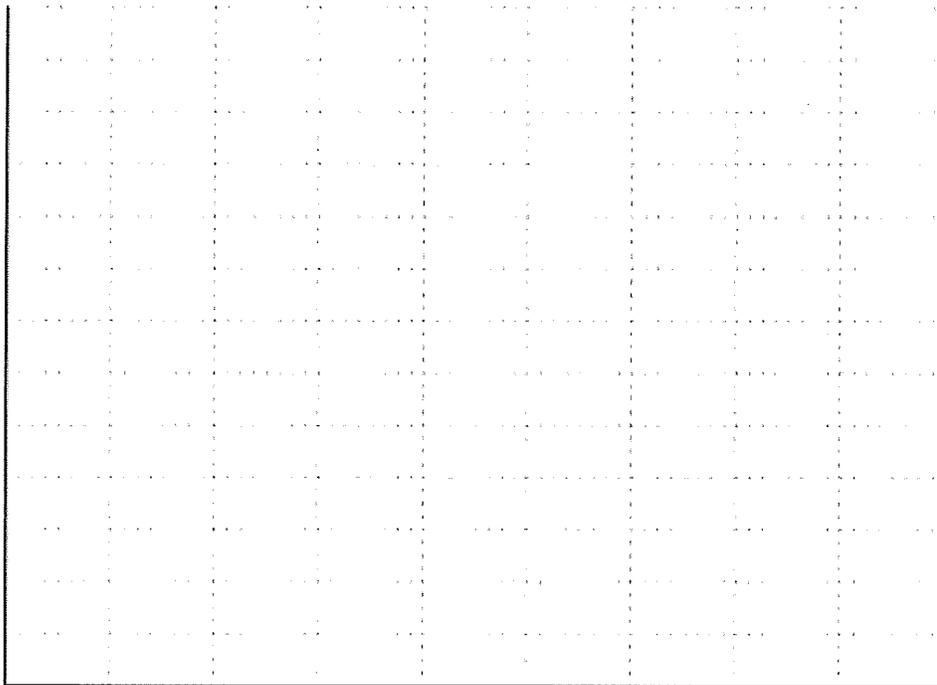
b)  $y = -2 \cos\left(4x - \frac{\pi}{2}\right) + 3$



4 marks

16. Draw a graph of the following sinusoidal situation (2 marks). Be sure to label the axes – use words and units. Write a sinusoidal equation in the form  $y = a \cos \frac{2\pi(t - c)}{p} + b$ . Be sure to show your work for full marks.

The high tide in Vancouver harbour occurs at 11:30 am and the depth at high tide is 13 feet.  
 The low tide in the harbour occurs on the same day at 7:10 pm and the depth at low tide is 2 feet.

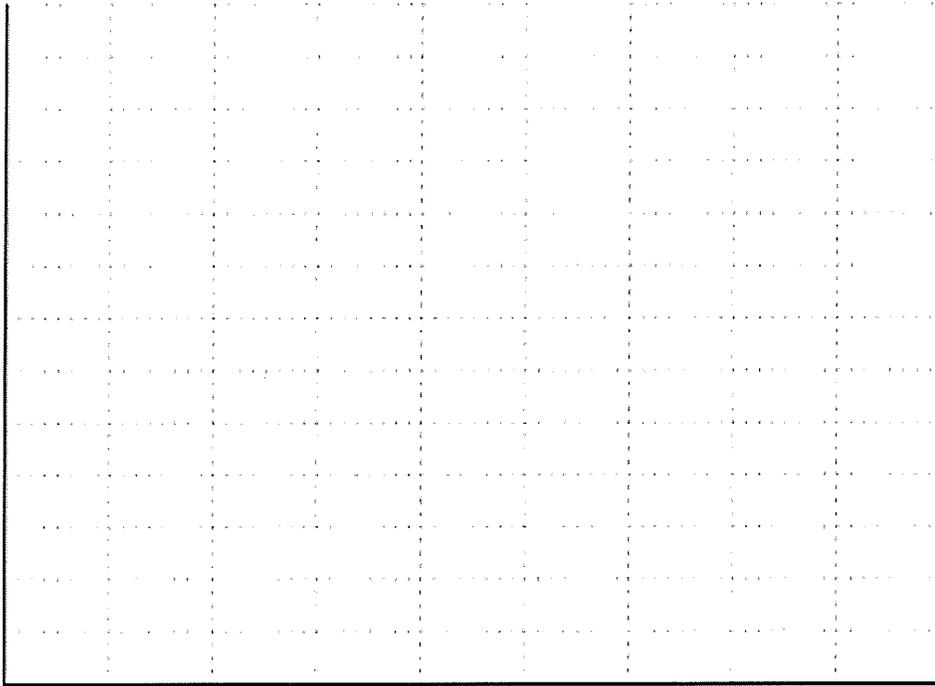


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Equation: \_\_\_\_\_  
 2 marks

17. A Ferris wheel has a radius of 23 m. Passengers get on at the bottom which is 2 m off the ground. The Ferris wheel rotates every 40 seconds.

a) Graph your height  $h$  above the ground as a function of time  $t$ . Label axes. (2 marks)



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b) Determine a sine function that expresses your height  $h$  as a function of elapsed time  $t$ .

b) \_\_\_\_\_  
2 marks

c) Determine your height above the ground after 25 seconds.

c) \_\_\_\_\_  
1 mark

d) Determine the first time when your height is 40 m above the ground.

d) \_\_\_\_\_  
1 mark

