

## Ch 6 Test

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

14 /33

1. State  $y = \cos x$  in terms of sin \_\_\_\_\_  
 [1] ✓

2. For the trig function  $f(x) = -2 \cos(3x - 120) - 1$

(a) the phase shift \_\_\_\_\_ ✓

(b) the amplitude \_\_\_\_\_ ✓

(c) the period \_\_\_\_\_ ✓

(d) the axis  $y =$  \_\_\_\_\_ ✓

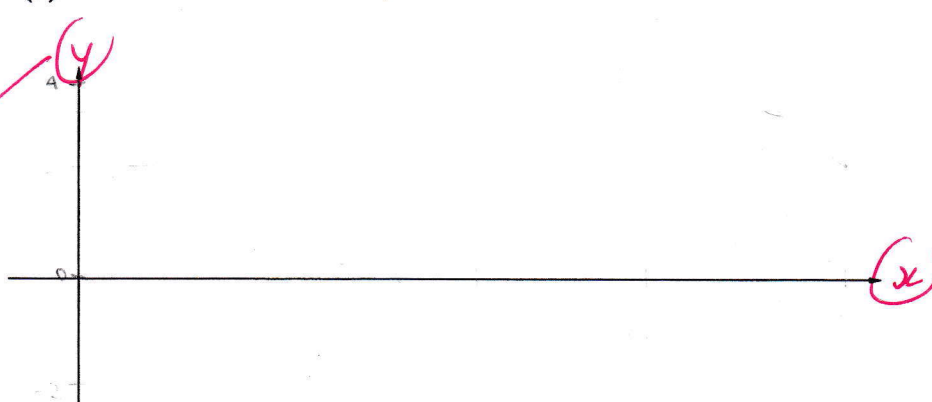
(e) the max \_\_\_\_\_ ✓

(f) the min \_\_\_\_\_ ✓

3. Sketch one period of the following functions. Include a scale and label all important points and the axis. (important points are at every quarter of a period.)

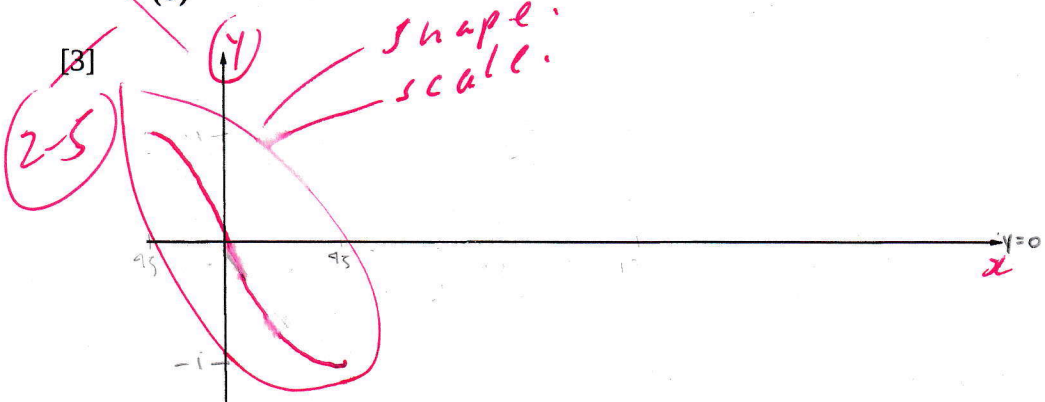
(a)  $f(x) = -2 \sin(x) + 2$

[3]



(b)  $g(x) = \cos(2(x + 45))$

[3]



8-5

8-5

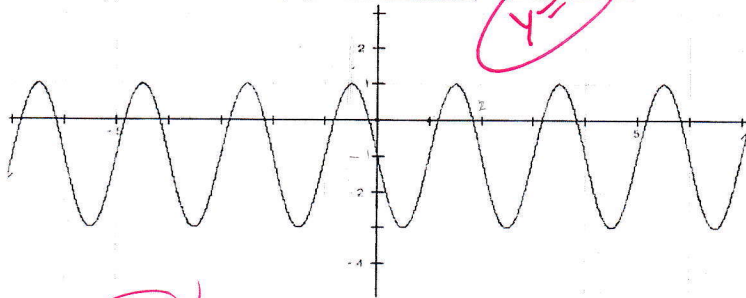
4. Write the following function in terms of Sin  $f(x) = -2 \cos(3x - 120) - 1$

[2]

5. (a) State the (i) period, (ii) amplitude, and (iii) equation of the axis

[3]

(i) \_\_\_\_\_ (ii) \_\_\_\_\_ (iii) \_\_\_\_\_



- (b) State a function in terms of **cosine** that represents this graph

[3]

6. The diameter of a car's tire is 60 cm. While the car is being driven, the tire picks up a nail.

- (a) **Draw a graph** and **write a trig function** that describes the height of the nail above the ground as a function of the distance the car has traveled after picking up the nail.

[4]

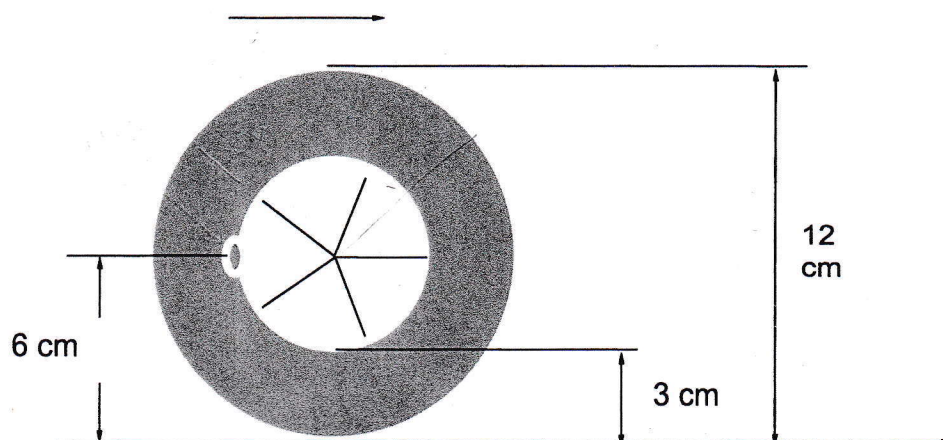
*sin graph*

- (b) How high above the ground is the nail after the car has traveled 1.2 km?

[1]

5-5

7.



Above is a diagram of a wheel rolling to the right on the floor. The valve stem is on the inside of the wheel indicated by the dot that is 6 cm above the ground.

- (a) Determine the sinusoidal function that describes the height of the valve stem above the ground as a function of distance that the wheel has moved forward. **(Include a graph)**

[4]

*Shape*

*X*

*?*

- (b) How high is the valve stem above the ground when the wheel has rolled 60 cm?

[1]

- (c) If the wheel is moving forward at a speed of  $24\pi$  cm/s then determine the sinusoidal function that describes the height of the valve stem above the ground as a function of time.

[2]

*X*