

Ch 6 Test

Name: SaySay

14 /33

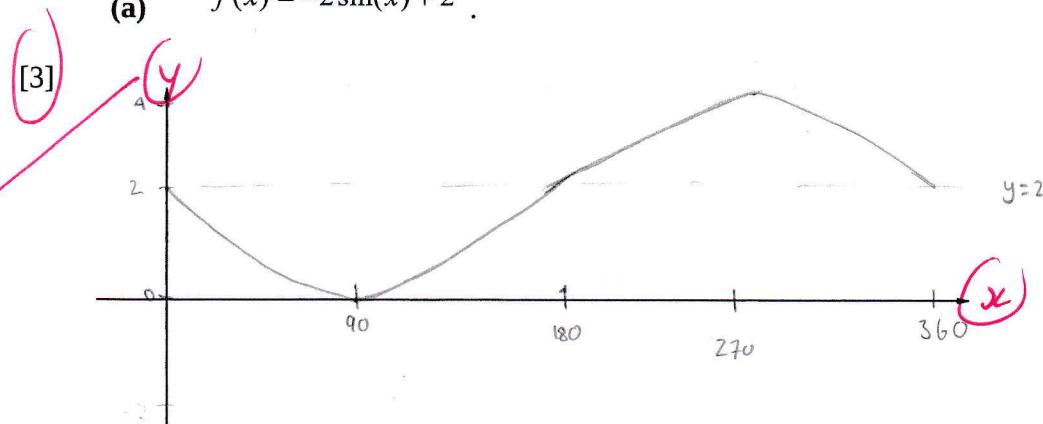
1. State $y = \cos x$ in terms of sin $y = \sin x$

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

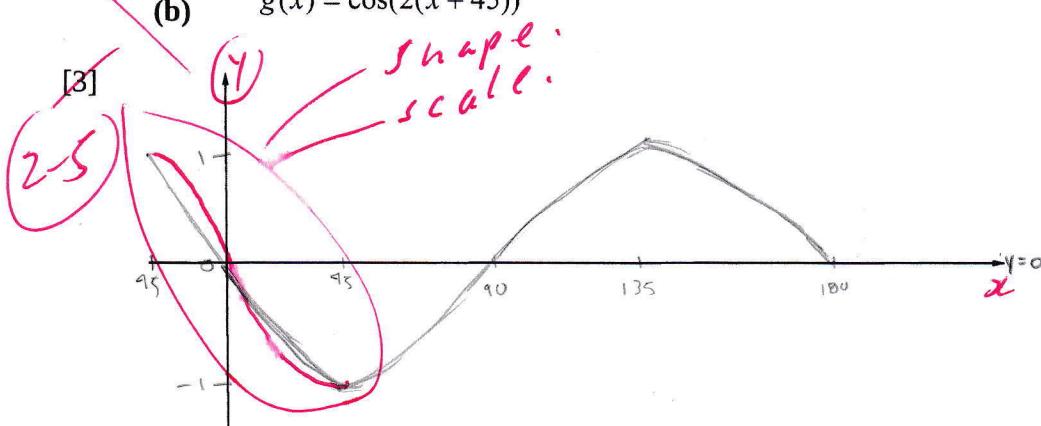
- (a) the phase shift 120
- (b) the amplitude 2
- (c) the period 3
- (d) the axis $y = -1$
- (e) the max 1
- (f) the min -3

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



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

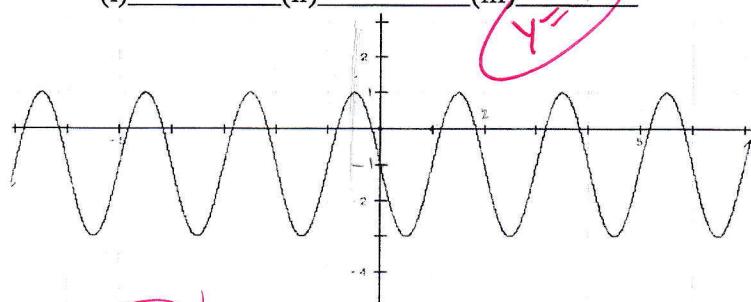


4. Write the following function in terms of Sin $f(x) = -2 \cos(3x - 120) - 1$

(6.5)

$$f(x) = -2 \sin(3(x - 90)) - 1$$

5. [3] (a) State the (i) period, (ii) amplitude, and (iii) equation of the axis

(2.5)(i) 2 (ii) 2 (iii) -1-1y''

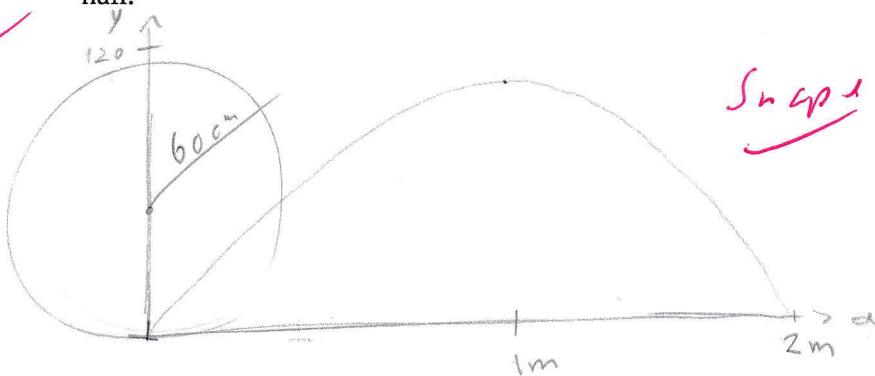
- [3] (b) State a function in terms of **cosine** that represents this graph

(2.5)

$$f(x) = 2 \cos(180(x + 0.5)) - 1$$

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]

$$f(x) = 60 \sin(x) + 60$$

y

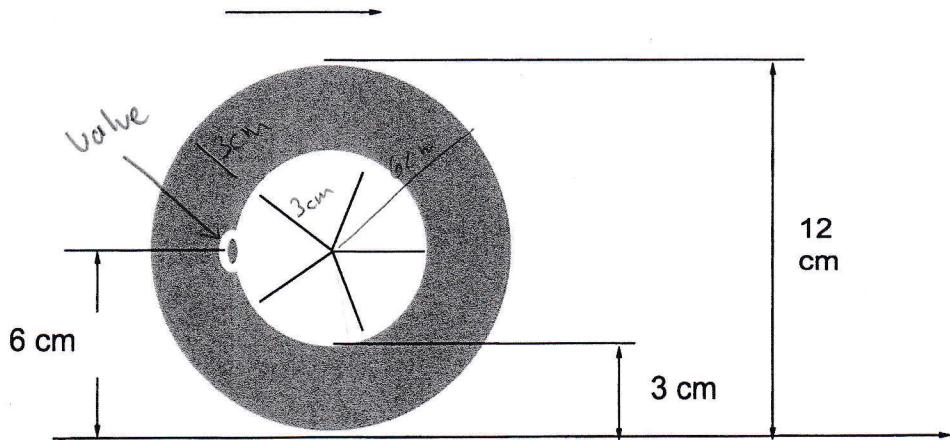
- (b) How high above the ground is the nail after the car has traveled 1.2 km?

[1]

If the nail returns to the original place it was punctured and the wheel rotates once around every 2 m that should mean in 1.2 Km it should be 0 cm above the ground.

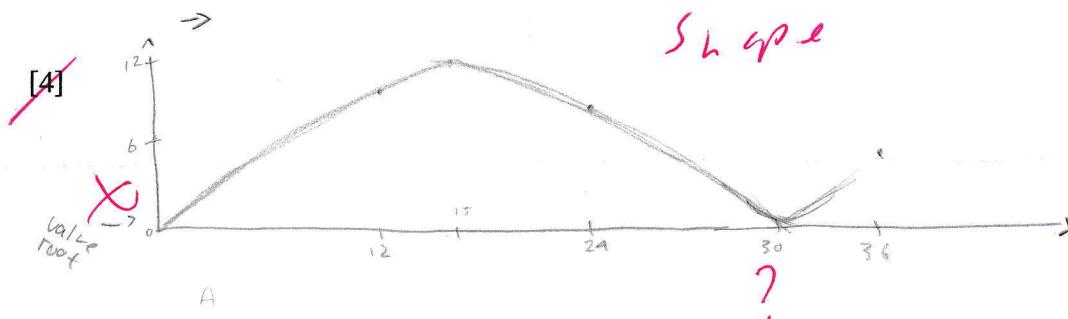
15.5

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)



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

It should be the same place it started. 6cm off the ground

[1]

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

[2]