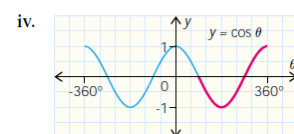
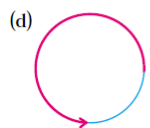
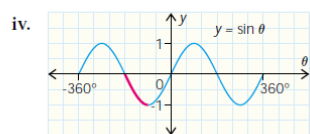
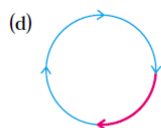
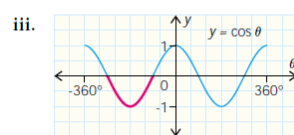
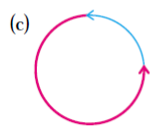
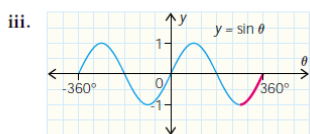
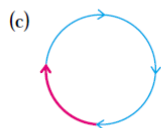
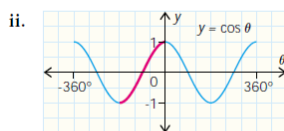
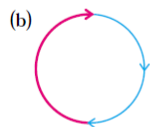
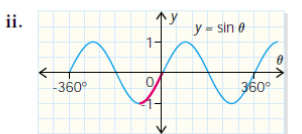
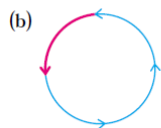
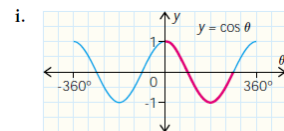
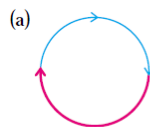
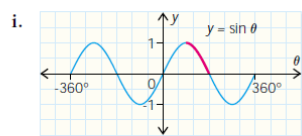
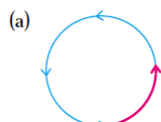


### Lesson 31 – Homework – Complete the following questions

1. Match the “Ferris Wheel” section of a ride with the correct portion of the sin graph & the cosine graph



2.

Consider the function  $f(\theta) = \cos \theta$ .

(a) Complete the table using the unit circle and sketch the graph.

$\theta$	$-360^\circ$	$-270^\circ$	$-180^\circ$	$-90^\circ$	$0^\circ$	$90^\circ$	$180^\circ$	$270^\circ$	$360^\circ$
$f(\theta)$									

(b) State the coordinates of the maximum and minimum values of  $f(\theta) = \cos \theta$  within the domain of the table.

(c) What are the coordinates of the zeros of the function within this domain?

(d) Show that  $f(\theta) = f(-\theta)$  for all values of  $\theta$  in the table.

3. Use your graphing calculator to help you answer these questions:

Evaluate  $y = \cos \theta$  for  $0^\circ \leq \theta \leq 540^\circ$  when  $y = -0.7$ . Answer to the nearest degree.

Evaluate  $y = \sin \theta$  for  $-90^\circ \leq \theta \leq 540^\circ$  when  $y = -0.3$ . Answer to the nearest degree.

(a) Evaluate  $h(t) = \cos(20t)^\circ$  for  $t = 3$ .

(b) What is the value of  $t$  when  $h(t) = 0.3$  for  $0 \leq t \leq 18$ ?

(a) Evaluate  $h(t) = 4 \sin(30t)^\circ$  for  $t = 10$ .

(b) What is the value of  $t$  when  $h(t) = 3.2$  for  $0 \leq t \leq 12$ ?

4. Use your TI-84 to help answer these questions:

The height,  $h$ , of a basket on a water wheel at time  $t$  is given by  $h(t) = \sin(6t)^\circ$ , where  $t$  is in seconds and  $h$  is in metres.

- (a) How high is the basket at 14 s?
- (b) When will the basket first be 0.5 m under water?

The vertical distance in metres of a rider with respect to the horizontal diameter of a Ferris wheel is modelled by  $h(t) = 5 \cos(18t)^\circ$ , where  $t$  is the number of seconds.

- (a) To one decimal place, what is the rider's vertical distance with respect to the horizontal diameter of the wheel when  $t = 8$  s? 16 s? 30 s?
- (b) When is the rider first at 4.5 m?  $-3.2$  m?
- (c) When is the third time the rider is at  $-2.5$  m?