

3U Quiz

$$\frac{11+1}{12} = \frac{\quad}{12}$$

Name \_\_\_\_\_

1. The number of frogs in a particular swamp in Ontario follows a yearly cycle. This cycle can be modeled as a sinusoidal function. The population ranges from 80 frogs at the beginning of April to 280 frogs, 6 months later, at the beginning of October.

a) Sketch a graph showing the frog population,  $P$ , of frogs over time,  $t$  in months. ( $t=0$  represents April,  $t=1$  represents May etc.) [3]



b) Determine the equation of both a cosine and sine function for the above graph. [3]

2. The height,  $h$ , in metres, of bucket on a Ferris Wheel after  $t$  seconds is given by:  
 $h = 9\sin[7.5(t - 12)] + 11$ . [5]

- a) How long does it take the Ferris wheel to go around once? \_\_\_\_\_
- b) What is the maximum height of the bucket? \_\_\_\_\_
- c) What is the minimum height of the bucket? \_\_\_\_\_
- d) How high is the bucket after 20s? \_\_\_\_\_
- e) How fast does the Ferris turn? (m/s) \_\_\_\_\_