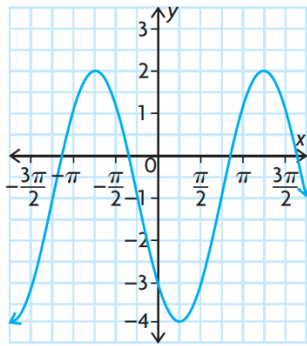
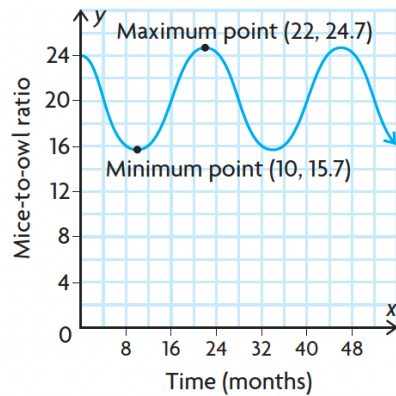


1. Determine a sine and a cosine function of the following diagram.



2. The graph shows a situation that modelled the populations of mice and owls in a particular are. Determine a sine and a cosine function



3. Given the following functions. a) Describe the steps of transformation, b) sketch one period, 3) state the range of the function.

$$y = -18 \cos \left[6 \left(x + \frac{\pi}{12} \right) \right] + 2$$



4. State equivalent expression, then evaluate.

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

b) $-\tan\left(\frac{2\pi}{3}\right)$

5. If $\sin x = -\frac{1}{2}$ and $x \in [-2\pi, 2\pi]$. Find x .

6. If $\cot x = 3$ and $x \in [-2\pi, 2\pi]$. Find x

7. If $\sin x = -\frac{5}{13}$ and x is an angle in quadrant 4. Draw a diagram of angle x , and determine cosine, tangent, sec, csc, and cot ratio.

8.

The population of a ski-resort town, as a function of the number of months into the year, can be described by a cosine function. The maximum population of the town is about 15 000 people, and the minimum population is about 500 people. At the beginning of the year, the population is at its greatest. After six months, the population reaches its lowest number of people. What is the equation of the cosine function that describes the population of this town?

9. The temperature, T , in degrees Celsius, of the surface water in a swimming pool varies from 19°C to 25°C *for every 12 hours*. A function models temperature and time, where time is the number of hours since sunrise at 6am. a) Graph one period. b) Find an equation. c) what is the temperature at 7am in the morning? d) during what time the temperature is below 22°C in one day?

