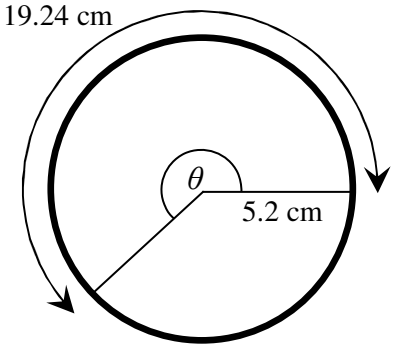


1) For the diagram on the left, determine the value of angle θ in radians.

2) State the related acute angle for $-\frac{16\pi}{9}$ in exact form. _____

3) Convert $\frac{5\pi}{18}$ radians to degree measure.

4) Convert 2 radians to degree measure. Round your answer to the nearest tenth of a degree.

5) Convert $125°$ to radian measure. Express your answer in simplified **exact** form.

6) Convert $-65.2°$ to radian measure. Round your answer to the nearest hundredth of a radian.

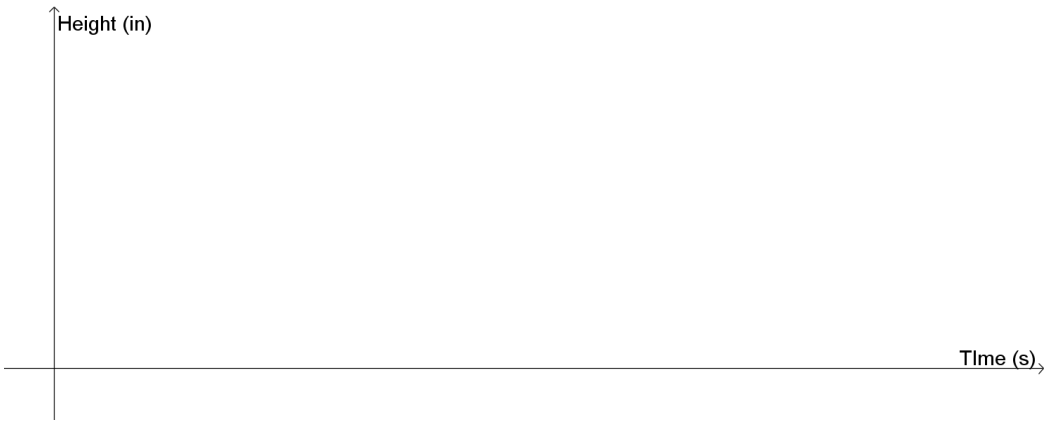
7) For each of the following,
   i) rewrite the expression in terms of the **related acute angle**.
   ii) determine the **exact** value of the expression.

   a) $\csc(210°)$ b) $\tan\left(\frac{3\pi}{4}\right)$ c) $\cos\left(-\frac{5\pi}{3}\right)$

8) The propeller on a small aircraft has a diameter of 76 inches. In its lowest position, the tip of a blade is 12 inches from the ground. While idling on the ground, the propeller is rotating at a speed of 600 revolutions per minute.

a) Determine, in seconds, how long it takes for the propeller to make one revolution.

b) Draw a rough sketch showing the height of a blade's tip off the ground versus time, in seconds, for two revolutions, beginning with the tip of the blade in its highest position. Be sure to label key values on the axes.



c) Determine the equation of a function, $h(t)$, to model a blade tip's height off the ground after t seconds, starting with the tip of the blade in its highest position.

d) Determine the propeller's angular velocity in radians per second. Leave your answer in exact form.

e) Determine how far the tip of a blade travels in 3 minutes. Round your final answer to the nearest inch.

9) Sketch the graph of $y = 3\sin(4x - 2\pi)$ on the domain $0 \le x \le 2\pi$.

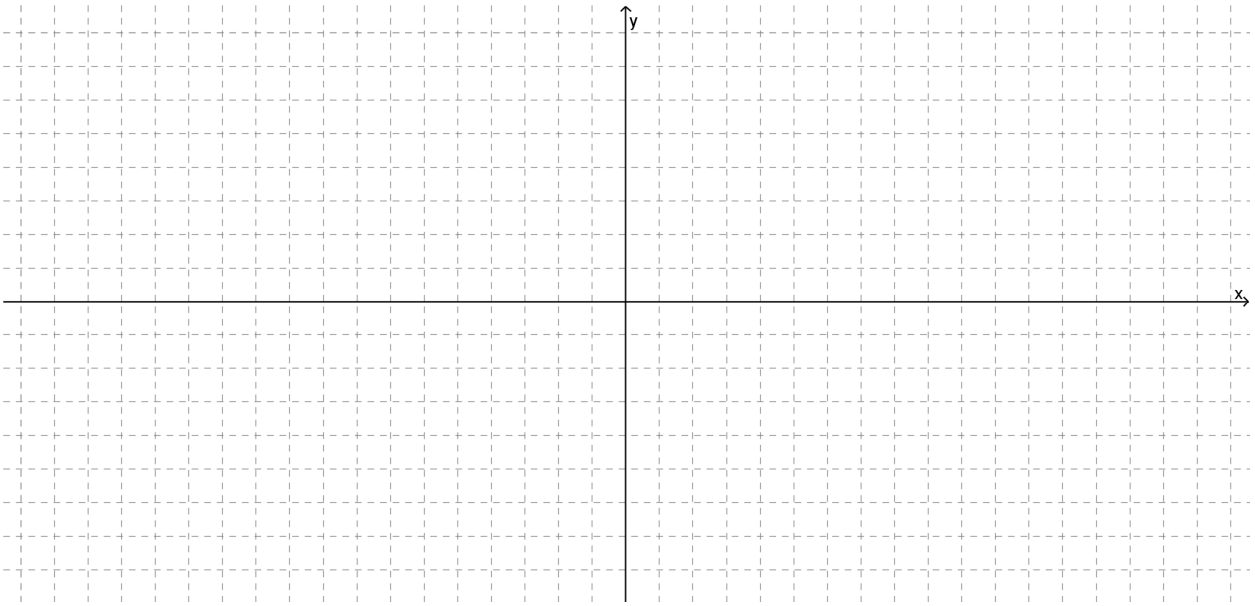
10) Mitchell was planning to sketch the graph of $y = 8\cos 3\left(x + \frac{2\pi}{5}\right) - 9$. What would be an appropriate value by which to go up on the *x*-axis?

11) Determine the instantaneous rate of change of the function $y = 6\sin(4x - 3)$ at $x = 5$. Round your final answer to the nearest tenth.

12) If $\sin\theta = -\frac{\sqrt{3}}{2}$ and $0 \le \theta \le 2\pi$, determine all of the possible values of θ.

13) Pedro was investigating the graph of $y = \sec x$. He claimed that the domain of this function is $\left\{ x \in \Re \mid x \neq \frac{\pi}{2} n, n \in \mathrm{Z} \right\}$. Is Pedro's claim correct? Explain.

14) Sketch the graph of $y = \tan x$ over the domain $-4\pi \leq x \leq 4\pi$.



15) State an expression that gives the location of all x-intercepts for the function $y = \tan\left(x - \frac{\pi}{7} \right)$.