SOLUTIONS: Worksheet 1

1. Find a *positive* angle co-terminal with (and not equal to) $\frac{4\pi}{7}$. (The units of your answer should be *radians*. Provide an ***exact*** value.)

To find a positive angel coterminal with $\frac{4\pi}{7}$ we can add 2π:

$$\frac{4\pi}{7} + 2\pi = \frac{4\pi}{7} + \frac{14\pi}{7}$$
$$= \frac{18\pi}{7}$$

Thus, $\frac{18\pi}{7}$ is coterminal with $\frac{4\pi}{7}$.

2. Convert the angle $\frac{2\pi}{5}$ (in radians) into degrees; provide an ***exact*** value.

$$\frac{2\pi}{5} = \frac{2\pi}{5} \cdot \frac{360^\circ}{2\pi}$$
$$= \frac{5 \cdot 72^\circ}{5}$$
$$= 72^\circ$$

Therefore, $\frac{2\pi}{5} = 72^\circ$.

3. What is the length of the arc spanned by an angle of 36° in a circle of radius 15 feet?

To compute the arc-length we can use the formula $s = r\theta$, but we need θ in radians to use this formula:

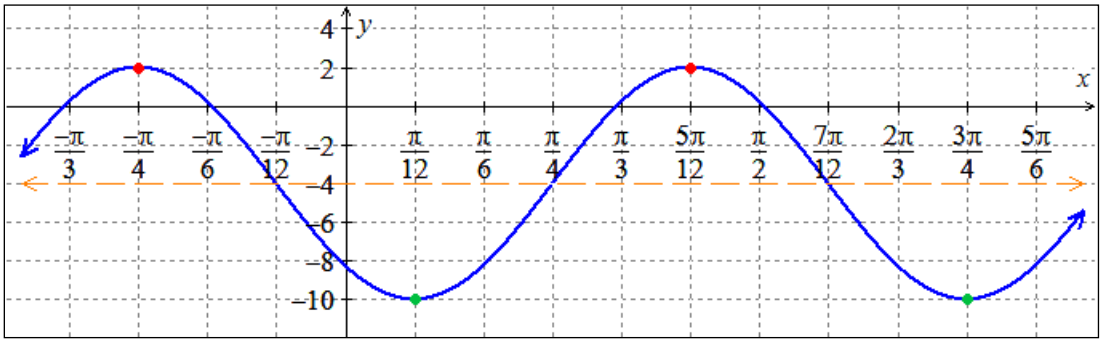
$$\theta = 36^\circ = 36^\circ \cdot \frac{2\pi}{360^\circ}$$
$$= \frac{\pi}{5}$$

So

$$s = r\,\theta$$
$$= 15 \cdot \frac{\pi}{5}$$
$$= 3\pi.$$

Thus, the length of the arc is 3π feet.

4. List the *period*, *midline*, and *amplitude* of the function $y = g(t)$. Note that the following points are on the graph: $\left(-\frac{\pi}{4}, 2\right)$, $\left(\frac{\pi}{12}, -10\right)$, $\left(\frac{5\pi}{12}, 2\right)$, and $\left(\frac{3\pi}{4}, -10\right)$.



A graph of the function $y = g(t)$.

The **period** of the function graphed above is $\frac{2\pi}{3}$ **units** since $\frac{5\pi}{12} - \left(-\frac{\pi}{4}\right) = \frac{2\pi}{3}$.

The **midline** of the graphed function is $y = -4$ since $y = \frac{2 + (-10)}{2} = -4$.

The **amplitude** of the graphed function is **6 units** since $2 - (-4) = 6$.