

# Math 1613 - Trigonometry

## Quiz #9 - 2011.09.15

### Solutions

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1. What does it mean if we state that a function  $f(x)$  is periodic with period  $p$ ?

It means that every  $p$  units, the function repeats itself, i.e.  $f(x + p) = f(x)$  for all  $x$ .

2. If the wheels on a bike you are riding have radius  $r = 16$  inches, and your angular velocity is  $\omega = \frac{3}{4}\pi$  radians per second, how far will you travel in 15 minutes? Please express your answer in feet.

First, remember that  $v = r \cdot \omega$ :

$$v = r\omega = 16 \text{ in} \cdot \frac{3}{4}\pi \frac{\text{rad}}{\text{sec}} = 12\pi \frac{\text{in}}{\text{sec}}$$

And then that  $d = v \cdot t$ :

$$\begin{aligned} d &= 12\pi \frac{\text{in}}{\text{sec}} \cdot 15 \text{ min} \\ &= 12\pi \frac{\text{in}}{\text{sec}} \cdot 15 \text{ min} \cdot \frac{60 \text{ sec}}{1 \text{ min}} \cdot \frac{1 \text{ ft}}{12 \text{ in}} \\ &= 900\pi \text{ ft} \end{aligned}$$