Math 11022   Trigonometry   Spring 2015
Quiz 4 Exam1 & 1.6   Instructor: Matt Alexander
Name: _Key_   Quiz Score: _____ /10

1. A lawn sprinkler shoots water out from its base to a distance of 10 feet. If the sprinkler sweeps through an angle of 60 degrees, then what is the area of lawn that the sprinkler can water? (3pts)

$$A = \frac{1}{2}\theta r^2 = \frac{1}{2}\left(\frac{\pi}{3}\right)(10)^2 = \frac{100\pi}{6} = \boxed{\frac{50\pi}{3} \, ft^2} \approx 52.36 \, ft^2$$

$$\theta = 60° = \frac{\pi}{3}$$

2. If the Moon is 238,900 miles from the center of the Earth, and it takes 27 days to orbit around the Earth, what is the linear speed of the Moon? (Leave your answer in exact form. Answers in miles per day are fine.) (3pts)

$$V = \frac{s}{t} = \frac{r \cdot \theta}{t} = \frac{238900 \cdot 2\pi}{27} = \boxed{\frac{477800\pi}{27} \, \frac{miles}{days}} \approx 55594.55 \, miles/day$$

3. Given $y = \tan\left(\dfrac{x}{3} - \dfrac{\pi}{2}\right)$. (4pts)

What is the period of the graph?

$$per = \frac{\pi}{\frac{1}{3}} = 3\pi$$

What is the phase shift of the graph?

$$\frac{\frac{\pi}{2}}{\frac{1}{3}} = \frac{3\pi}{2}$$