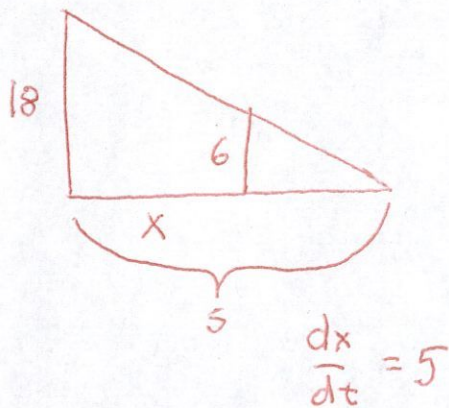


Math 220 Section 6 Quiz 6

14 October 2015

Name: *Answer Key*

1. A person 6 feet tall walks away from a street light at a rate of 5 feet per second. If the light is 18 feet above ground level, how fast is the tip of the person's shadow moving?



$$\frac{18}{s} = \frac{6}{s-x}$$

$$18s - 18x = 6s$$

$$12s = 18x$$

$$2s = 3x$$

$$2 \frac{ds}{dt} = 3 \frac{dx}{dt}$$

$$\boxed{\frac{ds}{dt} = \frac{15}{2}}$$

2. An oil tanker ruptures and oil spills, spreading in a circular pattern. If the radius of the circle of oil increases at the constant rate of $\frac{3}{2}$ ft./sec., how fast is the area of the spreading oil increasing when the radius is 30 feet?

$$A = \pi r^2$$

$$\frac{dA}{dt} = 2\pi r \frac{dr}{dt}$$

$$= 2\pi (30) \left(\frac{3}{2}\right) = \boxed{90\pi}$$