Math 2215 - Calculus 1

Quiz #11 - 2007.03.06

Solutions

The area of a circular doggie puddle is growing at a rate of 2 in^2/sec. How fast is the radius of the puddle growing when $r = 2$ in?

We use the well known formula

$$A = \pi r^2$$

and

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

Now, we are given that $r = 2$ and $\frac{dA}{dt} = 2$. Plugging this in gives

$$2 = 4\pi \frac{dr}{dt}.$$

Solving for $\frac{dr}{dt}$ gives

$$\frac{dr}{dt} = \frac{1}{2\pi} \ in.$$