Section 1.3: Equations of Growth and Decay.

$$y' = ky$$

" the growth rate of y is proportional to y with constant k "

$$\frac{y'}{y} = k$$

Solutions: $y = Ae^{kx}$

If $k > 0$, $\frac{dy}{dx}$ is always positive ← positive $y(0)$
y is growing as x increases

If $k < 0$, $\frac{dy}{dx}$ is always negative ← positive $y(0)$
y is decaying as x increases

1. $\frac{dy}{dx} = .07y$

Find $y(5)$

4. $\frac{dy}{dx} = .05y - 2400$

$y(0) = 100{,}000$
Find x s.t
$y(x) = 0$