Quiz 1 Solution

1. (a) $y_n = 1.05 y_{n-1} - 10{,}000$

(b) $$y_n = \frac{b}{1-a} + \left(y_0 - \frac{b}{1-a}\right) a^n$$

$$y_0 = 10{,}000{,}000$$

$$y_n = \frac{-10{,}000}{1-1.05} + \left(10{,}000{,}000 - \frac{-10{,}000}{1-1.05}\right)(1.05)^n$$

Simplified:

$$y_n = 200{,}000 + (9{,}800{,}000)(1.05)^n$$

(c) $$y_5 \approx 12{,}707{,}559$$

2. (a) $y_n = y_{n-1} - 10{,}000$ b/c $a = 1$

(b) $y_0 = 10{,}000{,}000$, $y_1 = 10{,}000{,}000 - 10{,}000$

$y_2 = 10{,}000{,}000 - 2 \cdot (10{,}000)$

Answer $\Rightarrow$ $\boxed{y_n = 10{,}000{,}000 - n \cdot (10{,}000)}$

Quiz 2 solution

1. $f(x) = \frac{1}{x} = x^{-1}$

Use point-slope form: $y - y_0 = m(x - x_0)$

$x_0 = 1$

$y_0 = f(1) = \frac{1}{1} = 1$

$m = f'(1)$

$f'(x) = -x^{-2}$ (power rule)

$f'(1) = -(1)^{-2} = -1$

$$\boxed{y - 1 = -1(x - 1)}$$

2. Use point slope form $y - y_0 = m(x - x_0)$

$x_0 = 1$

$y_0 = 0$

$m = 1$

$$\boxed{y - 0 = 1(x - 1)}$$