

Linear Growth, Recursion and Slope



Preliminaries

- Rates of Change

Objectives

- Understand the connection between recursive addition and the rate of change.

Recursive Definition

$$\begin{cases} P_{1970} = 18,000 \\ P_{t+10} = P_t + 4,000 \end{cases}$$

$$P_{1980} = 18,000 + 4,000 = 22,000$$

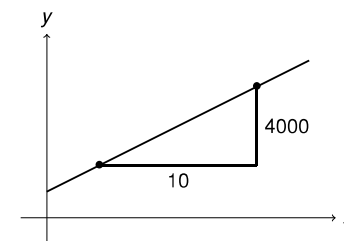
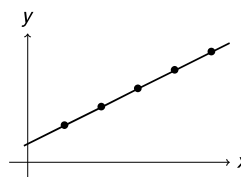
$$P_{1990} = 22,000 + 4,000 = 26,000$$

$$P_{2000} = 26,000 + 4,000 = 30,000$$

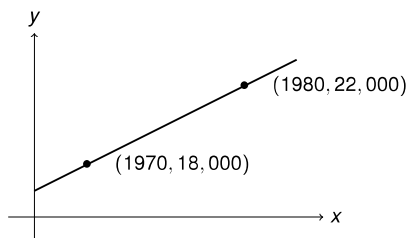
$$P_{2010} = 30,000 + 4,000 = 34,000$$

Example 1

Year	Population
1970	18,000
1980	22,000
1990	26,000
2000	30,000
2010	34,000



Slope



$$\text{slope} = \frac{22,000 - 18,000}{1980 - 1970} = \frac{4000}{10} = 400$$