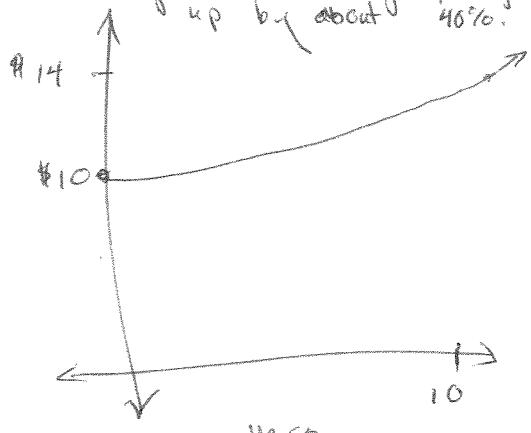
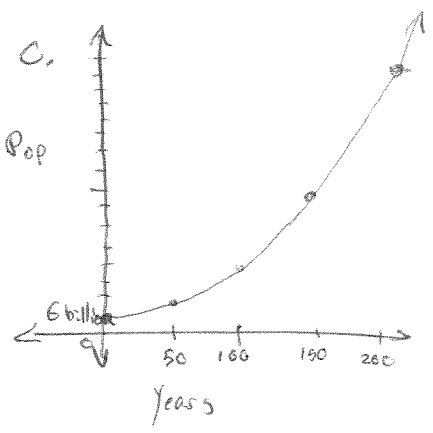
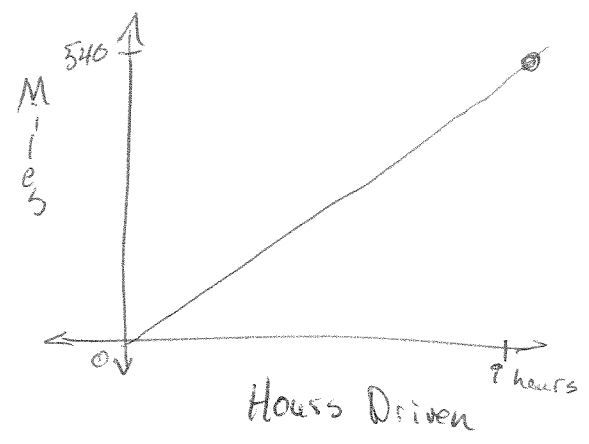


1a. Milk is about \$4 per gallon now. Most prices double about every 20 years. In 10 years, it'll go up by about 40%.



Milk (like most prices) goes up EXPONENTIALLY.

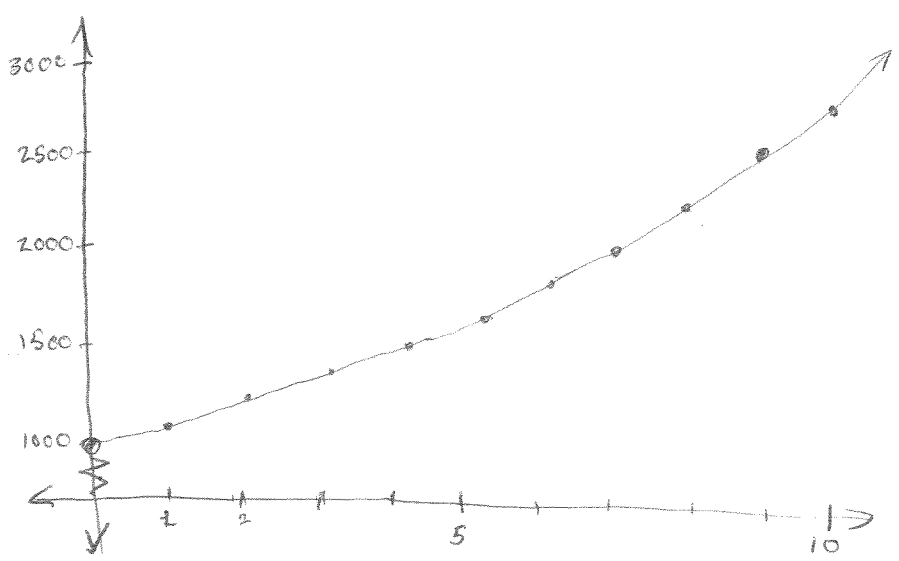
b. Since DISTANCE = RATE x TIME, this is linear.



Pop. growth is exponential. Doubles every ~50 yrs.

Years	\$
0	\$1000
1	\$1104.71
2	\$1220.39
3	\$1348.18
4	\$1489.35
5	\$1645.30
6	\$1817.59
7	\$2007.92
8	\$2218.17
9	\$2450.49
10	\$2707.04

Exponentially.



9B #21. a. Rain fallen after a given number of hours

b. slope =  $\frac{4-0}{3-0} = \frac{4 \text{ inches}}{3 \text{ hours}} = 1.333 \text{ inches per hour}$

Equation is

$$y = 1.333 \dots x + 0$$

$$\boxed{y = 1.333x}$$

#22a. Population after a given number of years

b. slope =  $\frac{80-0}{8-0} = \frac{80 \text{ thousand}}{8 \text{ years}} = 10 \text{ thousand per year}$

Equation is  $\boxed{y = 10x}$

#23a. Distance from home after a given number of hours.

b. slope =  $\frac{0-500}{7-0} = \frac{-500 \text{ mi}}{7 \text{ hours}} = -71.43 \text{ miles per hour}$

Equation is:  $\boxed{y = -71.43x + 500}$

#24a. Profit at a given number of units sold

b. slope =  $\frac{10,000-0}{2000-1000} = \frac{10,000}{1000 \text{ units}} = \$10 \text{ per unit}$

Equation is:  $y = 10x + b$

plug in (1000, 0):

$$0 = 10(1000) + b$$

$$\begin{aligned} -10,000 \\ -10,000 = b \end{aligned}$$

so  $\boxed{y = 10x - 10,000}$

#25a. Shoe size for a person of a given height

b. slope =  $\frac{12-1}{80-0} = \frac{11}{80} = 0.1375$

Equation is:  $y = 0.1375x + b$

$$\boxed{y = 0.1375x + 1}$$

#26a. Record time for a race of a given length.

b. slope =  $\frac{38-23}{0-10} = \frac{15 \text{ km/hr}}{-10 \text{ km}} = -1.5 \cdot \frac{1}{\text{hr}} = -1.5 \text{ hr}^{-1}$

Equation is:  $\boxed{y = -1.5x + 38}$

4I. a. Rain fallen after a given number of hours

b. slope =  $\frac{2-0}{3-0} = \frac{2 \text{ inches}}{3 \text{ hours}} = 0.667 \text{ inches per hour}$

Equation is:  $\boxed{y = 0.667x}$

II. a. Height at a given age

b. slope =  $\frac{200-120}{15-10} = \frac{80 \text{ cm}}{8 \text{ years}} = 10 \text{ cm per year}$

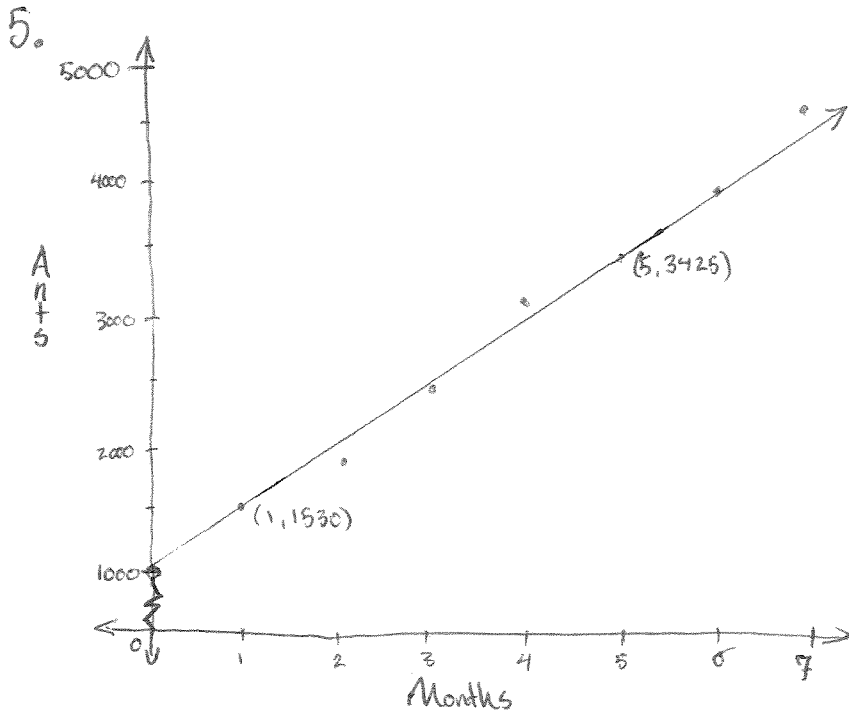
Equation is:  $y = 10x + b$

$$120 = 10 \cdot 10 + b$$

$$120 = 100 + b$$

$$\begin{aligned} -100 \\ 20 = b \end{aligned}$$

$$\boxed{y = 10x + 20}$$



$$\text{Slope} = \frac{3425 - 1530}{5 - 1} = \frac{1895 \text{ ants}}{4 \text{ months}} = 473.75$$

473.75 ants per month!

Equation is

$$y = 473.75x + b$$

$$1530 = 473.75 \cdot 1 + b$$

$$-473.75$$

$$b = 1056.25$$

So

$$y = 473.75x + 1056.25$$