

2.1

Slope

(#6)

A - positive, most positive

B - 0

C - negative

D - positive

E - 0

F - negative, most negative

2.2

⑦ Estimate graphically or numerically

$$f'(2) \approx \frac{f(2.001) - f(2)}{2.001 - 2} = \frac{3^{2.001} - 3^2}{2.001 - 2} = 9.89$$

mistakes

- Directions say to explain your reasoning

②④ $P'(0) \approx \frac{P(h) - P(0)}{h}$ use $h = .01$

$$P'(0) \approx \frac{1.15(1.014)^{0.01} - 1.15}{0.01} = 0.01599 \text{ billion/year}$$
$$= 16.0 \text{ million people/yr}$$

$$P'(2) \approx \frac{1.15(1.014)^{2.01} - 1.15(1.014)^2}{0.01} = 0.0164 \text{ billion/yr}$$
$$= 16.4 \text{ million people/yr}$$

Mistakes

- Answer must be in millions

2.3

(40) f increases for values of $x < -2$
decreases between $x = -2$ & $x = 2$
constant for $x > 2$

Possible graph

