5b) $\sqrt[240]{3} = \sqrt[240]{\left(1+\frac{r}{12}\right)^{240}}$

$3^{1/240} = 1+\frac{r}{12}$

$1.\text{D}0458804 = 1+\frac{r}{12}$

$.055056 = r$

$5.506\% = r$

9c) $A = Pe^{rt}$

$5665.74 = 5000e^{10r}$

$\ln(1.133148) = \ln(e^{10r})$

$\ln 1.133148 = 10r$

$\frac{\ln 1.133148}{10} = r$

$1.25\% = r$

$\ln 2 = \ln e^{.0125t}$

$\frac{\ln 2}{.0125} = t$

55.452 years.

1d.) $\log 3 = \log\left(1 + \frac{.045}{12}\right)^{12t}$

$\log 3 = \log(1.00375) \cdot 12t$

$\frac{\log 3}{12\log(1.00375)} = t$

$t = 24.459$ years

9b) $\ln 2 = \ln e^{21r}$

$\ln 2 = 21r$

$\frac{\ln 2}{21} = r$

$3.3007 = r$

$A = Pe^{\frac{\ln 2}{21}t}$

Exponential Growth and Decay Models

11-17, 20
skip 20e

$$A = P(1 \pm r)^t$$

(won't have compounding)

$$\left(1 + \frac{r}{n}\right)^{nt}$$

$n = 1$

(7) $A = P(1+r)^t$

$= 9.75(1+.15)^5$

$= \$19.61$

(8) $A = 2000(1-.2)^4$

$= \$819.20$

(9) $25.25 = P(1+.04)^{35}$

$\$6.40 = P$

(4) $7000 = 15000(1-r)^5$

$\sqrt[5]{\frac{7}{15}} = \sqrt[5]{(1-r)^5}$

$.858620703 = 1 - r$

$r = 14.138\%$.

(11) $A = P(1+r)^t$

$= 180(1+.22)^8$

$= 883$ bacteria

(6) $A = P(1+r)^t$

$= 30(1+1)^5$

$= 30(2)^5$

$= 960$ words

30

60

100% increase

% increase

$20 $24

$\frac{\text{change}}{\text{original}}$

$\frac{4}{20} = .2$

20%

HW 17.) $150 yest. $162 today

17a.) rate?

$12 / $150

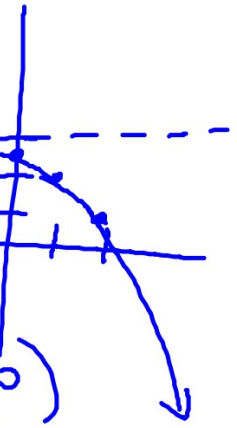
.08

8%

$y = -2^{x-1} + 3$

$y = -1 \cdot 2^{x-1} + 3$

x	y
0	$2\frac{1}{2}$
1	2
2	1



D: $(-\infty, \infty)$

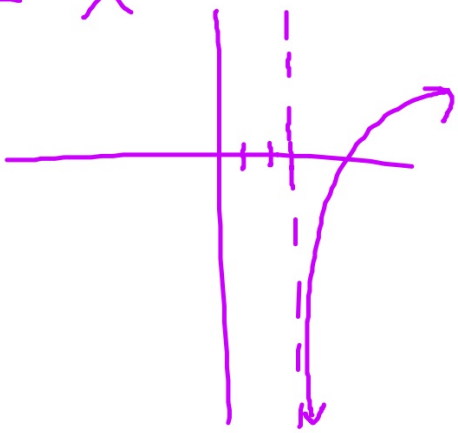
R: $(-\infty, 3)$

$y = \log_2(x-3)$

$2^y = x - 3$

$2^y + 3 = x$

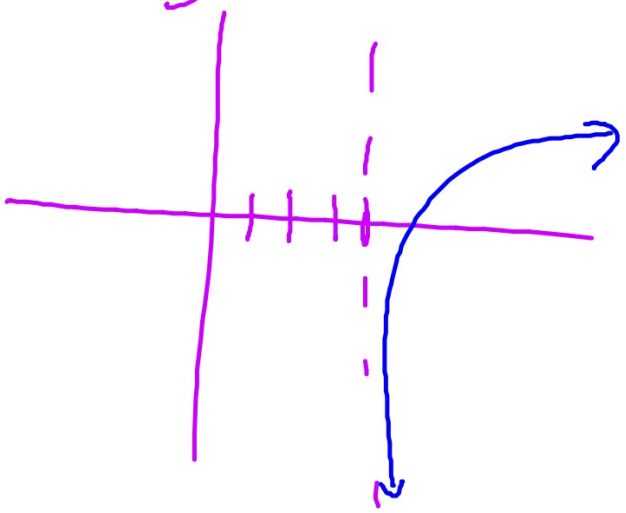
x	y
$3\frac{1}{2}$	-1
4	0
5	1



$y = \log_3(x-4)$

x	y
$4\frac{1}{3}$	-1
5	0
7	1

$3^y + 4 = x$



Sketch

Asymp. $x=4$

$D\ (4,\infty)$

$R\ (-\infty,\infty)$