Transforming Exponential Functions II (7.2)   *p354*   *day 3*

Stocks

Mutual funds   Index Funds

How to buy and sell

Transforming Exponential Functions II (7.2)   *p354*   *day 3*

hw: p354#3cde, 7ab

7. Describe the transformations that must be applied to the graph of each exponential function $f(x)$ to obtain the transformed function. Write each transformed function in the form $y = a(c)^{b(x-h)} + k$.
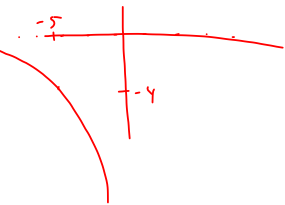
a) $f(x) = \left(\frac{1}{2}\right)^x$, $y = f(x-2) + 1$

b) $f(x) = 5^x$, $y = -0.5f(x-3)$

c) $m(x) = -4(3)^{x+5}$

d) $y = \left(\frac{1}{2}\right)^{3(x-1)}$

e) $n(x) = -\frac{1}{2}(5)^{2(x-4)} + 3$

Quiz tomorrow

Transforming Exponential Functions II (7.2)   *p354*   *day 3*

ex1: The half life of Polonium-210 is 4 days.
a) Write an equation modelling what happens if you start with 25 g.

$$A(t) = 25\left(\frac{1}{2}\right)^{\frac{t}{4}}$$

$$A(t) = A_o\left(\frac{1}{2}\right)^{\frac{t}{h}} \leftarrow \text{half life}$$

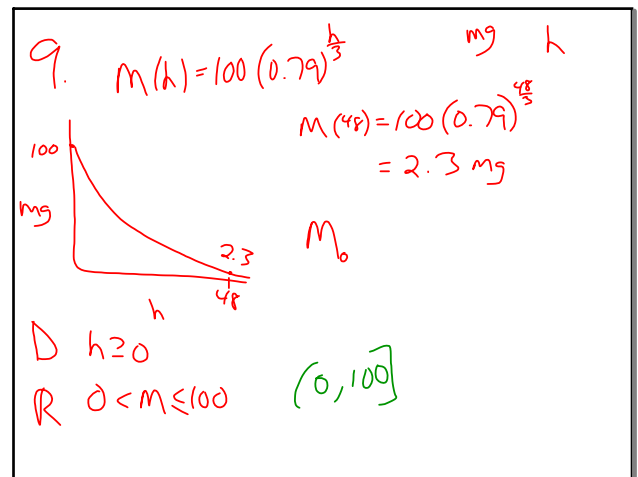initial amount

b) How much will be left in 3 weeks?

$$A(21) = 25\left(\frac{1}{2}\right)^{\frac{21}{4}}$$

$$= 0.66g$$

21 days = 3 weeks

q

---

9. $M(h) = 100(0.79)^{\frac{h}{3}}$ mg   h

$M(48) = 100(0.79)^{\frac{48}{3}}$

$= 2.3$ mg

M_o

2.3

h

48

D $h \geq 0$

R $0 < M \leq 100$ $(0, 100]$

Transforming Exponential Functions II (7.2)   *p354*   *day 3*

ex2: From 1985 to 2000, coyote populations on PEI increased at a rate of 10% per year. There were 200 coyotes in 1985.
a) Write a function modelling the number of coyotes with respect to years since 1985.

$$P(t) = 200(1.1)^t$$

b) How many were there in 1990? How about 1995?

$$P(5) = 200(1.1)^5$$
$$= 322$$

$$P(10) = 200(1.1)^{10}$$
$$= 519$$

c) How long did it take the population to double?

$$400 = 200(1.1)^t$$
$$2 = 1.1^t$$

guess+check

$$t = 7.3$$

d) What is the range of this function?

→2000 15 yrs

$$\therefore P(15) = 200(1.1)^{15}$$
$$= 835$$

$$[200, 835]$$

Rule of 72

how long will it take something to double?

growing at 10% $\dfrac{72}{10} = 7.2$ *years*

growing at 6% $\dfrac{72}{6} = 12$ *years*

Transforming Exponential Functions II (7.2)　*p354*　*day 3*

ex3: School populations on PEI dropped from 28,000 in 1977 to 20,000 in 2009.

What was the rate of decay?　Create a function to model the school population wrt years since 1977.

$P(n) = 28000 (r)^n$

$20000 = 28000 (r)^{32}$

$0.714 = r^{32}$　　　$\sqrt[32]{0.714}$

$0.9895 = r$

$1 - 0.99 = 0.01$

∴ 1% decay

$P(n) = 28000 (0.99)^n$

Predict how many students are in the system in 2021.

$P(44) = 28000 (0.99)^{44}$

$= 17,993$

compare to 2018
20,600

Transforming Exponential Functions II (7.2)　*p354*　*day 3*

hw: p354#3fg, 11, 12

Quiz MacBeth

Teens and risk

Are they stupid?

Can they accurately assess risk?

Why do they do foolish things?

Rewards