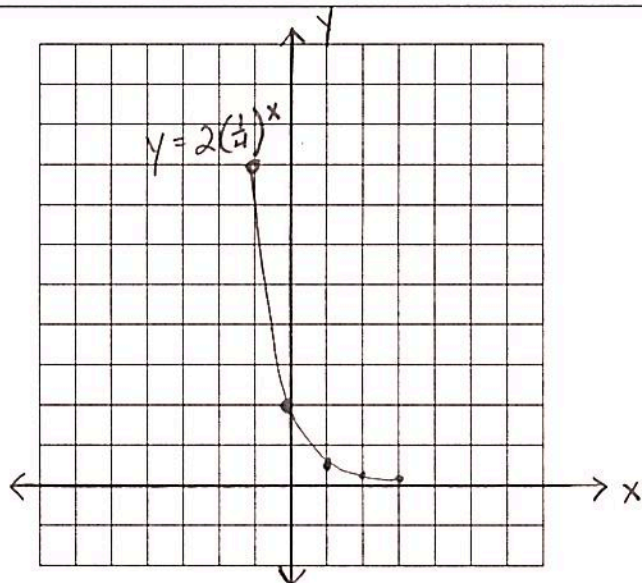


# RH Review – Exponential Functions

1. Graph the exponential function  $y = 2\left(\frac{1}{4}\right)^x$  over the interval  $-1 \leq x \leq 3$ .

x	y
-1	8
0	2
1	.5
2	.125
3	.03125



2. Identify the y-intercept of each function below and state whether the function will increase or decrease when graphed.

a)  $f(x) = 34(2.75)^x$   $y\text{-int} = 34$   $\text{incr}$

b)  $f(x) = (0.25)^x$   $y\text{-int} = 1$   $\text{decr}$

c)  $f(x) = \frac{2}{3}\left(\frac{3}{2}\right)^x$   $y\text{-int} = \frac{2}{3}$   $\text{incr}$

3. Consider the exponential function  $f(x) = \frac{1}{2}(4)^x$ .

a) What is the average rate of change of the function over the interval  $1 \leq x \leq 3$ ?  $(1, 2)$   $\frac{30}{2} = 15$

b) Is the average rate of change found in part a greater than or less than the rate of change of the function  $g(x) = \frac{1}{4}x + 2$ ? Justify your response.  $\text{Greater because } 15 > \frac{1}{4}$

4. A pharmaceutical company has tested a new time-release cold pill. It finds that the amount of milligrams,  $f(n)$ , of the active ingredients of the pill left in the bloodstream  $n$  hours after it is taken can be estimated using the function  $f(n) = 35(0.87)^n$ .

a) How many milligrams of cold medicine are in the pill? 35

b) What is the decay rate? What is the decay factor?  
13% .87

c) How many milligrams of the cold medicine remain in the body after 5 hours have passed?  
 $f(5) = 35(0.87)^5$   $f(5) = 17.4447...$  About 17.4 mg

5. Find the balance after 5 years of an account that pays 5.2% interest compounded yearly with an initial investment of \$1250.  $y = 1250(1.052)^5$   $y = \$1,610.60$

6. A construction company purchased some equipment costing \$300,000. The value of the equipment depreciates at a rate of 14% per year.

a) Write a formula that models the value of the equipment each year.  $y = 300000(.86)^t$

b) What is the value of the equipment after 9 years?  $y = 300000(.86)^9$   $y = \$77,198.23$

c) Estimate when the equipment will have a value of \$50,000.  $50000 = 300000(.86)^t$   
Between 11 and 12 years