$5x-2y \le 75$

$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$

$S = Pe^{rt}$

$APY = (1+\frac{r}{n})^{n}-1$

Math 1090 ~ Business Algebra

Section 4.2 Exponential Functions

Objectives:

- Identify and evaluate exponential functions.
- Evaluate the natural base *e* and graph natural exponential functions.
- Sketch transformations of an exponential function.
- Use an exponential function in a business application.

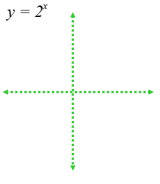
An exponential function has a variable in the exponent and a constant base.

If $a \in \mathbb{R}$, $a > 0$ and $a \neq 1$, then $y = f(x) = a^x$ is an exponential function with base a.

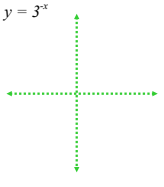
Graphs of exponential functions

Ex 1:

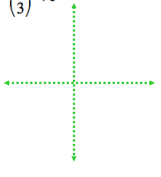
$y = 2^x$



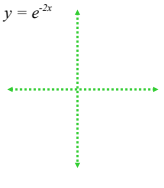
$y = 3^{-x}$



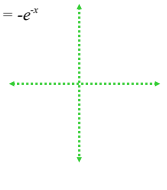
$y = \left(\frac{1}{3}\right)^x + 1$



$y = e^{-2x}$



$y = -e^{-x}$



Ex 2: Label these as either power functions or exponential functions.

a) $y = 2^x$ b) $y = e^{2x}$ c) $y = -e^2$

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

Ex 3: Simplify

a) $\frac{4^{2-x}}{4^{3+x}}$ b) $(2^{3x})^{(x-2)}$

Ex 4: If \$10,000 is invested for t years at 10% interest, compounded continuously, the future value will be $S = 10{,}000e^{0.10t}$. What will this account be worth in 5 years?