

## 7.2 Day 2 Notes Solving Exponential Equations & Inequalities

Objectives: Solving exponential equations & inequalities using same base formula

An exponential equation is an equation containing one or more expressions that have

\_\_\_\_\_.

To solve exponential equations: \_\_\_\_\_.

1) Writing them so that the bases are all the same.      If  $b^x = b^y$ , then  $x = y$

### **Solve for x:**

Ex.  $3^x = 3^2$

a)  $3^{2x-1} = 3^{x+2}$

Ex.  $8^x = 2^{x+6}$

b)  $25^{x-2} = 125$

Ex.  $3^{2x-1} = \frac{1}{9}$

c)  $\left(\frac{1}{36}\right)^{2x} = 6^5$

d)  $36^{2x+4} = 216^{x+5}$

e)  $\left(\frac{1}{64}\right)^{x-2} = 16^{3x+1}$

## Solving Exponential Inequalities

If  $b > 1$ ,  $b^x > b^y$  if and only if \_\_\_\_\_ . Example:  $2^x > 2^6$  if and only if  $x > 6$ .

**Solve:**

Ex.  $16^{2x-3} > 8$

1.  $625 \geq 5^{a+8}$

Ex.  $\left(\frac{1}{9}\right)^{3t+5} \geq \left(\frac{1}{243}\right)^{t-6}$

2.  $\left(\frac{1}{27}\right)^{2d-2} < 81^{d+4}$