Algebra 2 7.6

Solve exponential equations and inequalities using common logs Evaluate logarithmic expressions by changing bases

base exponent  $10^2 = 100$  exponent  $10^2 = 100$  logarithm default common log (default base) Whiteboards

Base 10

Use a calculator to evaluate each expression to the nearest ten-thousandth. diforest

- a. log 5
- 0.6990
- b. log 0.3

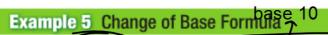


23. 
$$8^{x} = 40$$

$$8^{1.77\%} =$$
Can we get the bases the same?
$$\frac{(3. 8^{x} = 40)}{(3. 9^{x} = 1.6021)} = \frac{(3. 9^{x} = 1.6021)}{(3. 9^{x} = 1.77\%)} = \frac{(3. 9^{x} = 1.77\%)}{(3. 9^{x} = 1.77\%)} = \frac{$$

6 = 8.7461

- 1. Write in exp form
- 2. log (base 10) each side to solve



Express  $\log_3 20$  in terms of common logarithms. Then round to the nearest

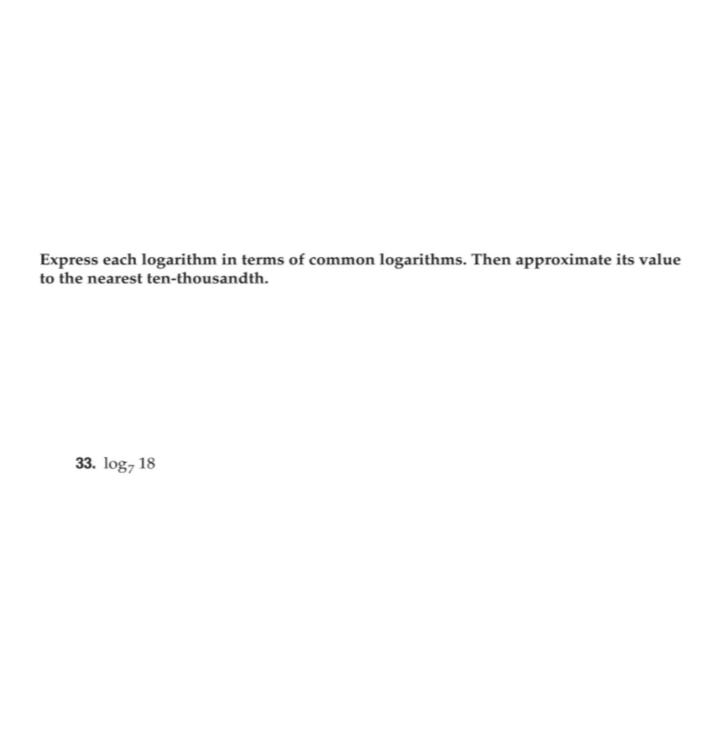
$$log_320=x$$

$$6.477/x = 1.30/0$$
 $0.477/x = 1.30/0$ 
 $0.477/x = 0.30/0$ 

$$|7' = 17$$
 $|7^2 = 289$ 
 $|7^3 = 4913$ 

X= 2-1147

17?=400 Guess and check...



## **Guided**Practice

**5.** Express  $\log_6 8$  in terms of common logarithms. Then round to the nearest ten-thousandth.

Can we get the bases to be the same? Always do the same thing to both sides...

## **Example 4** Solve Exponential Inequalities Using Logarithms

Solve  $3^{5y} < 7^{y-2}$ . Round to the nearest ten-thousandth.

5y log3 < (y-2) log 7

17-37 ous

