Notes Section 6.4 – Common Logarithms

I can find logarithms using a calculator
I can solve exponential equations using logarithms
I can find logarithms "of any base" using the change of base formula

Common Logarithm:

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

1. $\log 15$ 2. $\log 48$ 3. $\log 130$

Change of Base Formula:
If a, b, and c are positive numbers with $b \neq 1$ and $c \neq 1$, then

$$\log_c a = \text{—}$$

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Use the change-of-base formula:
Evaluate $\log_6 11$ using common logarithms :

$\log_6 11 =$ _____ $\approx$ _____ $\approx$ _____

You try ☺
Use the change-of-base formula to evaluate the logarithm:

$\log_{16} 26 =$ $\log_5 13 =$ $\log_3 125 =$

I can solve exponential equations by taking a logarithm of each side:
Solve:

$6^x = 27$ $4^{x-1} = 49$ $3^{2x+1} = 12$

You try ☺
Solve:

$4^x = 32$ $6^{x+3} = 124$

Solve by equating exponents:

$64^x = 16^{x+1}$

Solve each inequality:

$5^x \geq 42$ $3^{4x} \geq 72$ $27^{2p-4} \geq 9^p$

You try ☺
Solve each inequality:

$3^x \geq 53$ $2^{3x} \geq 56$ $8^{p-2} \geq 4^p$