

Review of 7.3-7.4

- Change $6^4 = 1296$ to logarithmic form.
 $\log_6 1296 = 4$
- Change $\log_{27} 9 = \frac{2}{3}$ to exponential form.
 $27^{\frac{2}{3}} = 9$

Calculate the following using mental math.

- $\log_8 100,000 = x$ $10^x = 100,000$ $x = 5$
- $\log_{64} 8 = x$ $64^x = 8$ $x = \frac{1}{2}$
- $\log_3 \frac{1}{27} = x$ $3^x = \frac{1}{27}$ $x = -3$

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Express each as a single logarithm.

Simplify.

- $\log_6 9 + \log_6 24$
 $\log_6(216)$
 $6^x = 216$ $x = 3$
- $\log_3 108 - \log_3 4$
 $\log_3(27)$
 $3^x = 27$ $x = 3$

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Rewrite the exponential equations so all the bases are the same. Then solve.

- $2^{5x} = 16^{x+6}$
 $2^{5x} = 2^{4(x+6)}$
 $5x = 4x + 24$
 $x = 24$
- $3^{-x} = 81^{\frac{x}{2}}$
 $3^{-x} = 3^{4(\frac{x}{2})}$
 $-x = 2x$
 $-x = 2x$
 $+x \quad -x$
 $0 = 3x$
 $x = 0$

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- $5^{4x} = \frac{1}{5}^{3x-7}$
 $5^{4x} = 5^{-1(3x-7)}$
 $4x = -3x + 7$
 $+3x \quad +3x$
 $7x = 7$
 $x = 1$
- $\frac{1}{8}^{2x+1} = \frac{1}{2}^{5x}$
 $2^{-3(2x+1)} = 2^{-1(5x)}$
 $-6x - 3 = -5x$
 $-6x - 3 = -5x$
 $+6x \quad +6x$
 $-3 = x$
 $x = -3$

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Assignment:

7-3 B, 7-4 B Practice sheet

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