p. 40-41 One to One Day 2 Sec: 7.5

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Warm up: Solve the exponents:

2^2 4 3^2 9 4^2 16 5^2 25 6^2 36

2^3 8 3^3 27 4^3 64 5^3 125 6^3 216

2^4 16 3^4 81 4^4 256 5^4 625 6^4 1296

2^5 32 3^5 243 4^5 1024 5^5 3125 6^5 7776

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One-to One property of Exponential Functions:

If 2 powers with the same base are equal, their exponents are equal.

$b^x = b^y$, then $x = y$

If the bases are not the same, we can rewrite one of the sides so that they do match.

1. $(3)^{3x} = (9)^{x+1}$

$3^{3x} = 3^{2(x+1)}$

$3x = 2(x+1)$

$3x = 2x + 2$

$-2x \quad -2x$

$x = 2$

2. $(2)^{5x} = (8)^{3x+4}$

$2^{5x} = 2^{3(3x+4)}$

$5x = 3(3x+4)$

$5x = 9x + 12$

$-9x \quad -9x$

$\frac{-4x}{-4} = \frac{12}{-4}$

$x = -3$

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3. $(256)^{2x-2} = (16)^{2x}$

$16^{2(2x-2)} = 16^{2x}$

$2(2x-2) = 2x$

$4x - 4 = 2x$

$-4x \quad -4x$

4. $(3)^{5x+4} = (81)^{11}$

$3^{5x+4} = 3^{4(11)}$

$5x+4 = 4(11)$

$5x+4 = 44$

$-4 \quad -4$

5. $(2)^{4x+12} = (512)^{8}$

$\frac{-4}{-2} = \frac{-2}{-2}x$

$x = 2$

6. $(36)^{2x+4} = (1296)^{4x+11}$

$36^{2x+4} = 36^{2(4x+11)}$

$2x+4 = 2(4x+11)$

$2x+4 = 8x+22$

$-2x \quad -2x$

$4 = 6x+22$

$-22 \quad -22$

$\frac{-18}{6} = \frac{6x}{6}$

$x = -3$

Homework:

Complete worksheet

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