

$$7^{2x+1} = 49^{3x-4}$$

$$7^{2x+1} = 7^{2(3x-4)}$$

$$7^{2x+1} = 7^{6x-8} \quad 2x+1 = 6x-8$$

$$\frac{9}{4} = \frac{4x}{4}$$

$$x = \frac{9}{4}$$

Unit 9 Objective 7 - Using Uncommon Bases

Converting from Exponential Form to Log Form

Easy: $5^{x-2} = 1041$

$$2 + \log_5 1041 = x - 2$$

$$2 + \log_5 1041 = x$$

$$2 + \frac{\log 1041}{\log 5} = x$$

$$x \approx 6.317$$

Medium: $\frac{3 \cdot 4^{2x+5}}{3} = \frac{16,476}{3}$

$$4^{2x+5} = 5492$$

$$-5 + \log_4 5492 = 2x + 5$$

$$\frac{-5 + \log_4 5492}{2} = \frac{2x}{2}$$

$$\frac{-5 + \frac{\log 5492}{\log 4}}{2} = x$$

$$x \approx 0.606$$

Medium: $10^{2x} - 12 = 44$
 $\quad\quad\quad +12 \quad +12$

$$10^{2x} = 56$$

$$\log_{10} 56 = 2x$$

$$\frac{\log 56}{2} = \frac{2x}{2}$$

$$\frac{\log 56}{2} = x$$

$$x \approx .874$$

Difficult: $7 + \log(4y - 1) = x + 3$
 $\quad\quad\quad -7 \quad\quad\quad -7$

$$\log(4y - 1) = x - 4$$

$$10^{x-4} = 4y - 1$$

$$\frac{10^{x-4} + 1}{4} = \frac{4y}{4}$$

$$\frac{10^{x-4} + 1}{4} = y$$