

# 11/5/14 3.4 Log/Exp Equations

$$e^{2+5w} = 12$$

$$\ln e^{2+5w} = \ln 12$$

$$2+5w = \ln 12$$

$$-2 \quad \frac{5w}{5} = \frac{(\ln 12)^2 - 2}{5} \quad \approx \sqrt{0.10}$$

$$\log_{12}(x+3) = \log_{12} x + \log_{12} 4$$

$$\log_{12}(x+3) = \log_{12} 4x$$

$$\begin{array}{r} x+3 = 4x \\ -x \quad -x \\ \hline 3 = 3x \\ \boxed{x=1} \end{array}$$

$$\text{Ex 5 } 4^{3x-1} = 3^{2-x}$$

$$\ln 4^{3x-1} = \ln 3^{2-x}$$

Goal  $x = ?$

1. get exp. down

$$(3x-1)\ln 4 = (2-x)\ln 3$$

2. combine variable

$$3x\ln 4 - \ln 4 = 2\ln 3 - x\ln 3$$

$$+x\ln 3 \quad +x\ln 3$$

$$3x\ln 4 + x\ln 3 - \ln 4 = 2\ln 3$$

$$+ \ln 4 \quad + \ln 4$$

$$3x\ln 4 + x\ln 3 = 2\ln 3 + \ln 4$$

$$\frac{3x\ln 4 + x\ln 3}{(3\ln 4 + \ln 3)} = \frac{2\ln 3 + \ln 4}{(3\ln 4 + \ln 3)}$$

factor  
x out

$\approx$

HW 196

28-32, 39-42