

5.5 Solving Exponential & Logarithmic Equations

Solving Exponential Equations

Ex 1: a) $6^x = 90$

$$\ln 6^x = \ln 90$$

$$x \ln 6 = \frac{\ln 90}{\ln 6}$$

$$x \approx 2.5$$

b) $e^x - 5 = 4.7$

$$+5 \quad +5$$

$$e^x = 9.7$$

$$\ln e^x = \ln 9.7$$

$$x \ln e = \ln 9.7$$

$$x = \frac{\ln 9.7}{\ln e}$$

$$x \approx 2.3$$

You try...

a) $4^{3x} = 5768$

$$\ln 4^{3x} = \ln 5768$$

$$3x \ln 4 = \ln 5768$$

$$3x = \left(\frac{\ln 5768}{\ln 4} \right) / 3$$

$$x \approx 2.1$$

b) $2^x + 7.8 = 19.65$

$$-7.8 \quad -7.8$$

$$2^x = 11.85$$

$$\ln 2^x = \ln 11.85$$

$$x \ln 2 = \ln 11.85$$

$$x = \frac{\ln 11.85}{\ln 2}$$

$$x \approx 3.6$$