

Solving Simple Log and Exponential Equations

Solve

$$1) \log_{10} 2x = 3$$

$$10^3 = 2x$$

$$1000 = 2x$$

$$x = \underline{500}$$

$$2) \log_x 4913 = 3$$

$$x^3 = 4913$$

$$x = \sqrt[3]{4913}$$

$$x = \underline{17}$$

$$3) \log_5 (2x-1) = 6$$

$$5^6 = 2x-1$$

$$15625 = 2x-1$$

$$2x = 15626$$

$$x = \underline{7813}$$

$$4) 6 \log_2 8x = 12$$

$$\log_2 8x = \frac{12}{6} = 2$$

$$2^2 = 8x$$

$$4 = 8x$$

$$x = \frac{4}{8} = \underline{\frac{1}{2}}$$

Solving Simple Log and Exponential Equations

Solve to 3 sig. fig.

$$1) e^x = 5$$

$$\log_e e^x = \log_e 5$$

$$x = \log_e 5$$

$$x = 1.60943$$

$$\Rightarrow \underline{1.61}$$

$$2) 8^x = 3$$

$$\log_e 8^x = \log_e 3$$

$$x \log_e 8 = \log_e 3$$

$$x = \frac{\log_e 3}{\log_e 8}$$

$$= 0.528$$

$$\log_{10} 8^x = \log_{10} 3$$

$$x \log_{10} 8 = \log_{10} 3$$

$$x = \frac{\log_{10} 3}{\log_{10} 8}$$

$$= 0.528$$

Solve $6^{x/4} = 1296$

$$\log_e 6^{x/4} = \log_e 1296$$

$$\frac{x}{4} \log_e 6 = \log_e 1296$$

$$x = \frac{4 \log_e 1296}{\log_e 6} = \underline{16.0}$$

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Ex 1E

- 1** **a** 243
b 10000
c 125
d e^2
e e^4
f 4096

- 2** **a** 4
b $\frac{16}{3}$
c 972
d $3e^4$
e 648
f $\frac{1}{3}e^{\frac{3}{5}}$
g 65
h 11

- 3** **a** 0.4771
b 2.07944
c 9
d 4

- 4** **a** 1.38629
b 4
c 4
d 0.75
e 3

- f** 12
g 10
h 0.462098

- 5** **a** 5
b 2
c 9
d 2
e 8