

## UNDERSTANDING LOGARITHMS (Honors Chemistry)

1. Calculate the logarithms of the following numbers:

a) 7.56     .879

d)  $4.27 \times 10^3$      3.630

b) 0.000678     -3.169

e)  $1.485 \times 10^{-6}$      -5.8283

c) 456     2.659

f)  $1 \times 10^{-12}$      -12.0

2. Calculate the antilogarithm of the following numbers:

a) 2.56      $3.6 \times 10^2$

d) 1.138      $1.37 \times 10^1$

b) 6.111      $1.29 \times 10^6$

e) 0.962     9.16

c) -3.55      $2.8 \times 10^{-4}$

f) -0.864      $1.37 \times 10^{-1}$

3. Determine the pH values for solutions with the following [H<sup>+</sup>] concentrations:      $\text{pH} = -\log [\text{H}^+]$

a)  $1 \times 10^{-8} \text{ M}$      8.0

c)  $4.8 \times 10^{-7} \text{ M}$      6.32

b)  $1 \times 10^{-1} \text{ M}$      1.0

d) 0.0034 M     2.47

4. Determine [H<sup>+</sup>] values for aqueous solutions having the following pH values:      $[\text{H}^+] = \text{antilog}(-\text{pH})$

a) 14.0      $1 \times 10^{-14}$

e) 11.65      $2.2 \times 10^{-12}$

b) 7.0      $1 \times 10^{-7}$

f) 2.945      $1.14 \times 10^{-3}$

c) 7.86      $1.4 \times 10^{-8}$

g) 3.68      $2.1 \times 10^{-4}$

d) 4.05      $8.9 \times 10^{-5}$

h) 12.850      $1.41 \times 10^{-13}$