

**EXERCISE A**

Solve each equation. Round to four decimal places.

1)  $9^x = 45$

2)  $3.1^{a-3} = 9.42$

3)  $11^{x^2} = 25.4$

4)  $10 = 6^{2y}$

Solve each inequality. Round to four decimal places.

5)  $4^{5n} > 30$

6)  $4^{p-1} \leq 3$

Express each logarithm in terms of common logs (base 10). Then approximate its value to four decimal places.  
**Solve** for x on number 10.

7)  $\log_7 5$

8)  $\log_3 42$

9)  $\log_2 9$

10)  $\log_5 8^x = 1$

Use a calculator to evaluate each expression to four decimal places.

11)  $\log 5$

12)  $\log 12$

13)  $\log 7.2$

14)  $\log 0.03$

**EXERCISE B**

Solve each equation or inequality. Round to four decimal places.

15)  $5^x = 52$

16)  $3^{n+2} = 14.5$

17)  $8.2^{n-3} = 42.5$

18)  $6^x \geq 42$

19)  $4^{3x} \leq 72$

20)  $7^{p+2} < 13^{5-p}$

21)  $8^{2n} = 52^{4n+3}$

22)  $9^{z-4} = 6.28$

Express each logarithm in terms of common logs (base 10). Then approximate its value to four decimal places.

23)  $\log_2 13$

24)  $\log_7 3$

25)  $\log_4(1.6)^2$

26)  $\log_6 \sqrt{5}$

For exercises 26-27, use the formula  $\text{pH} = -\log_{10} \text{H}^+$  (where  $\text{H}^+$  is the substance's hydrogen ion concentration in moles per liter), to find each pH level given the concentration of hydrogen ions. Round your answers to one decimal.

27) Ammonia:  $\text{H}^+ = 1 \times 10^{-11}$  mole per liter.

28) Orange juice:  $\text{H}^+ = 3.16 \times 10^{-4}$



Key

1)  $x = 1.7325$

3)  $x = \pm 1.1615$

5)  $n > 0.4907$

7)  $0.8271$

9)  $3.1699$

11)  $0.6990$

13)  $0.8573$

15)  $x = 2.4550$

17)  $n = 4.7820$

19)  $x \leq 1.0283$

21)  $n = -1.0178$

23)  $3.7004$

25)  $0.6781$

27)  $\text{pH} = 11$