

EXERCISE A

Given $\log_2 7 \approx 2.8074$, $\log_5 8 \approx 1.2920$, $\log_3 2 \approx 0.6309$ and $\log_3 7 \approx 1.7712$, approximate the value of each expression.

- 1) $\log_2 49$ 2) $\log_3 14$ 3) $\log_3 \frac{7}{2}$ 4) $\log_5 64$

Solve each equation. Check your solutions.

- 5) $\log_3 42 - \log_3 n = \log_3 7$ 6) $\log_2 (3x) + \log_2 5 = \log_2 30$
- 7) $2\log_5 x = \log_5 9$ 8) $\log_{10} a + \log_{10} (a + 21) = 2$

EXERCISE B

Use $\log_5 2 \approx 0.4307$ and $\log_5 3 \approx 0.6826$ to approximate the value of each expression.

- 9) $\log_5 50$ 10) $\log_5 20$ 11) $\log_5 \frac{3}{2}$ 12) $\log_5 9$

Solve each equation.

- 13) $\log_4 a + \log_4 9 = \log_4 27$ 14) $\log_7 24 - \log_7 (y + 5) = \log_7 8$
- 15) $2\log_{10} 6 - \frac{1}{3}\log_{10} 27 = \log_{10} x$ 16) $\log_b 8 + 3\log_b n = 3\log_b (x - 1)$ [solve for n]
- 17) $\log_6 (a^2 + 2) + \log_6 2 = 2$ 18) $\log_2 (y + 2) - \log_2 (y - 2) = 1$

$$19) \log_5 64 - \log_5 \frac{8}{3} + \log_5 2 = \log_5 (4p)$$



EXERCISE C

20) As elevation increases, the atmospheric air pressure decreases. The formula for pressure based on elevation is $a = 15,500(5 - \log_{10} P)$ where a is the altitude in meters and P is the pressure in pascals (1 psi \approx 6900 pascals). What is the air pressure at the summit in pascals for each mountain listed in the table?

MOUNTAIN	COUNTRY	HEIGHT (m)
Everest	Nepal / Tibet	8850
Trisuli	India	7074
Bonete	Argentina / Chile	6872
McKinley	United States	6194
Logan	Canada	5959

ANSWERS:

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|------------|------------|-----------------|-----------------------|
| 1) 5.6148 | 7) $x = 3$ | 13) $a = 3$ | 19) $p = 12$ |
| 3) 1.1403 | 9) 2.4307 | 15) $x = 12$ | 20Trisuli) 34,963.34 |
| 5) $n = 6$ | 11) 0.2519 | 17) $a = \pm 4$ | 20McKinley) 39,846.22 |