

[logarithmic functions]

1. Evaluate

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|---------------------------------------|------------------------------|
| a. $\log_7(7^3)$ | e. $7^{\log_7 3}$ |
| b. $\log_3 81$ | f. $7^{\log_7 5 + \log_7 4}$ |
| c. $\log_3 \left(\frac{1}{81}\right)$ | g. $7^3 \log_7 2$ |
| d. $\log_3 \sqrt[3]{81}$ | h. $\log_5 80$ |

2. Solve for x

- a. $\log_x 64 = 6$
 b. $\log_3 x = 2$
 c. $\log_3 x + \log_3(x - 2) = 1$

3. Evaluate

- | | |
|---|--------------------------------------|
| a. $\log_2 \left(\frac{1}{8}\right)$ | f. $\log_{\frac{1}{3}} 27$ |
| b. $\log_3(9\sqrt{3})$ | g. $\log_{\frac{2}{3}} \frac{8}{27}$ |
| c. $\log_5 \left(\frac{\sqrt{5}}{125}\right)$ | h. $\log_{\frac{2}{3}} \frac{9}{4}$ |
| d. $\log_3 9^4$ | i. $\log_{\frac{4}{25}} \frac{5}{2}$ |
| e. $\log_{\frac{1}{2}} 2$ | |

4. Given that $\log_{10} 2 = 0.301$ and $\log_{10} 5 = 0.699$. Find

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|----------------------------|----------------------------|
| a. $\log_{10} 10$ | e. $\log_{10} 125$ |
| b. $\log_{10} \frac{2}{5}$ | f. $\log_{10} \frac{1}{8}$ |
| c. $\log_{10} 2.5$ | g. $\log_{10} 0.001$ |
| d. $\log_{10} 10000$ | |

5. Evaluate

- | | |
|------------------------------------|--------------------------------|
| a. $7^{\log_7 3}$ | f. $8^{\log_2 5}$ |
| b. $5^{\log_5 2 + \log_5 3}$ | g. $8^3 \log_8 4 - 5 \log_8 2$ |
| c. $3^4 \log_3 2$ | h. $16^{\log_4 3}$ |
| d. $6^{\log_6 8 - \log_6 2}$ | i. $2^{\log_8 27}$ |
| e. $11^{\frac{1}{2} \log_{11} 16}$ | |

6. Solve for x :

- a. $8^x = 4^{x-1}$
 b. $\left(\frac{1}{9}\right)^{x+2} = \left(\frac{1}{27}\right)^x$
 c. $5^{x+2} = 1$
 d. $25^{x+2} = 625$
 e. $16^x \cdot 8^{x+1} = \frac{128}{32^{x-1}}$

7. Solve for x :

a. $4 \log_2 x = \log_2 16$

b. $\log_3 \sqrt{x} = \log_3 5$

c. $\log_x 16 = 4$

d. $\log_x 25 = 4$

e. $\log_x 16 = 3$

f. $\log_2 3 = x$

g. $\log_3 \frac{1}{2} = x$

h. $\log_{\frac{3}{5}} 4 = x$

8. Solve for x :

a. $\log_3 x + \log_3 5 = \log_3 20$

b. $\log_2 x - \log_2 3 = 3$

c. $\log_4(x - 3) - \log_4 x = 2$

d. $\log_3 x + \log_3(x - 2) = 1$

e. $\log_5(x + 2) + \log_5(x - 3) = \log_5 6$

f. $2 \log_6(x - 3) = \log_6(5 - x)$

