

Sample Questions Set 10

Given $\log_{10} 3 = x$, $\log_{10} 5 = y$

$$1. \quad \log_{10} (30) = \log_{10} (3 \times 10) = \log_{10} 3 + \log_{10} 10 = x + 1 \#$$

$$\begin{aligned} 2. \quad \log_{10} \left(\frac{500}{27} \right) &= \log_{10} 500 - \log_{10} 27 \\ &= \log_{10} (5 \times 100) - \sqrt{\log_{10} 3^3} = \log_{10} 5 + \log_{10} 100 - 3 \log_{10} 3 \\ &= y + \log_{10} 10^2 - 3x \\ &= y + 2 \log_{10} 10 - 3x = y + 2 - 3x = -3x + y + 2 \# \end{aligned}$$

$$\begin{aligned} 3. \quad \log_{10} (0.015) &= \log_{10} \left(\frac{15}{1000} \right) = \log_{10} 15 - \log_{10} 1000 \\ &= \log_{10} (3 \times 5) - \log_{10} 10^3 \\ &= \log_{10} 3 + \log_{10} 5 - 3 \log_{10} 10 \\ &= x + y - 3 \# \end{aligned}$$