Sample Questions Set 10

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

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

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

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