14E Laws of Logs

1. Write each of these as a single logarithm:

a) $\log_3(6) + \log_3(7)$

b) $\log_2(15) - \log_2(3)$

c) $2\log_5(3) + 3\log_5(2)$

d) $\log_{10}(3) - \log_{10}(\frac{1}{2})$

2. Write in terms of $\log_a x$, $\log_a y$ and $\log_a z$

a) $\log_a(x^2yz^3)$

b) $\log_a(\frac{x}{y^3})$

c) $\log_a\left(\frac{x\sqrt{y}}{z}\right)$

d) $\log_a\left(\frac{x}{a^4}\right)$

3. Solve the equation:

$$2log_2 x = 8$$

4. Solve the equation:

$$log_{10} 4 + 2log_{10} x = 2$$

5. Solve the equation:

$$log_3(x + 11) - log_3(x - 5) = 2$$