**Logarithms**

1. [A13] Simplify: $log_5 60 - log_5 15 - 2log_5 10.$

2. [A15] Solve: $3^{2x} = 75$

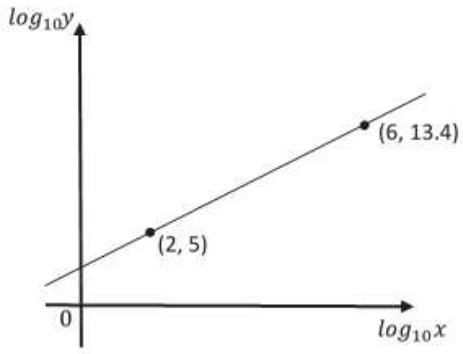
3. [A15] Solve: $log_2(x-2) + log_2 x = 3, \quad x > 2.$

4. [A18, A15] A radioactive element decays according to the equation $m = m_0 e^{-kt}$, where $m$ is the mass after $t$ seconds and $m_0$ is the initial mass.

   (a) If, after 4 seconds, the mass has decreased from 35g to 24.5, find the value of $k$ correct to 2 decimal places.

   (b) Hence, or otherwise, find the half-life of the element.

5. [A16] The graph illustrates the law $y = kx^n$.
Find the values of $k$ and $n$.




6. [A16] The graph illustrates the law $y = ab^x$.
Find the values of $a$ and $b$.