5. (i) Anna, who is confused about the rules for logarithms, states that

$$\left(\log_3 p\right)^2 = \log_3\left(p^2\right)$$

and $\quad \log_3(p + q) = \log_3 p + \log_3 q.$

However, there is a value for p and a value for q for which both statements are correct.

Find the value of p and the value of q.

(7)

(ii) Solve

$$\frac{\log_3(3x^3 - 23x^2 + 40x)}{\log_3 9} = 0.5 + \log_3(3x - 8).$$

(7)