

9. (a) Given that $p = \log_3 x$, where $x > 0$, find in simplest form in terms of p ,

(i) $\log_3 \left(\frac{x}{9} \right)$

(ii) $\log_3 (\sqrt{x})$

(2)

(b) Hence, or otherwise, solve

$$2\log_3 \left(\frac{x}{9} \right) + 3\log_3 (\sqrt{x}) = -11$$

giving your answer as a simplified fraction.

Solutions relying on calculator technology are not acceptable.

(4)