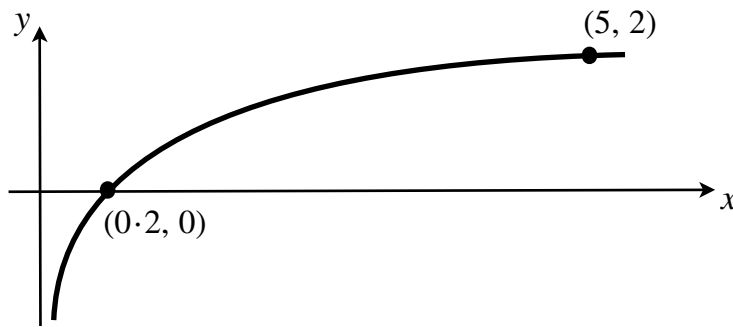


LOGARITHMS AND EXPONENTIALS

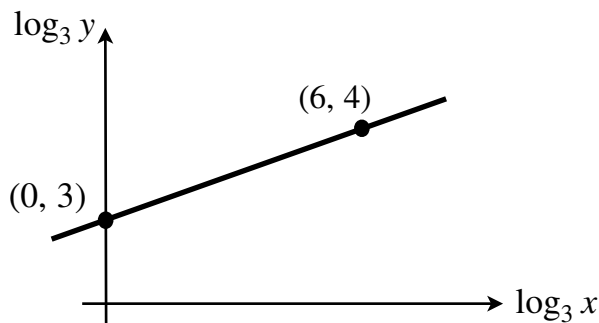
CALCULATOR

- 1) Evaluate $3 \log_4 2 + \log_4 18 \div 2 \log_4 3$ without a calculator.
- 2) Solve the equation $\log_3(x + 5) \div \log_3(2x - 2) = \log_3 x$ where $x > 1$.
- 3) Shown below is the graph with the equation $y = \log_a x + b$.



Work out the values of a and b .

- 4) The population P of tadpoles in a pond after t months is modelled by the equation $P(t) = 375e^{kt}$.
 - a) After 4 months there are 508 tadpoles in the pond. Calculate k to three decimal places.
 - b) How long will it take for the amount of tadpoles in the pond to treble?
- 5) Shown below is the graph of $\log_3 y$ against $\log_3 x$.



If $y = ax^b$, work out the values of a and b .