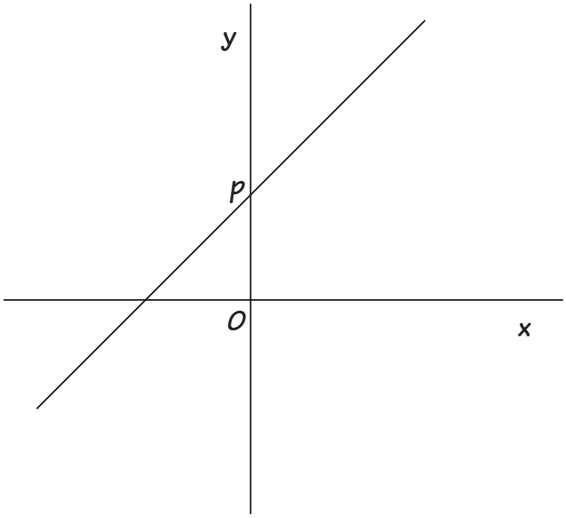
GRADIENTS OF LINES AND CURVES 1 STUDENT RESOURCE

Straight lines

Straight lines have the same gradient all along their length – otherwise they wouldn't be straight!
This straight line is $y = x + p$



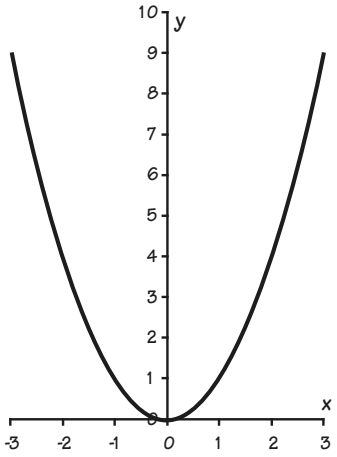
Sketch a line through p with a smaller gradient.

Sketch a straight line through $(0, p)$ with a

- large positive gradient
- small positive gradient
- zero gradient
- small negative gradient
- large negative gradient

Quadratic graphs

- Look at this graph of $y = x^2$.
  The gradient of the curve is different at different points along its length.



- Indicate on this graph, parts of the curve where the gradient is large and positive, small and positive, zero, small and negative, large and negative.
- Describe what happens to the gradient of the graph of $y = x^2$ as x increases (i.e. as you move across the page from left to right).
- Draw a sketch of the gradient function of $y = x^2$
- Draw a sketch of the graph of $y = x^2 + 4$.
  How does the graph differ from that of $y = x^2$?
- Describe what happens to the gradient of the graph of $y = x^2 + 4$ as x increases. How does the gradient of the graph of $y = x^2 + 4$ differ from that of $y = x^2$?
- What can you say about the gradient of the graph of $y = x^2 - 6$?
  Or any graph of the form $y = x^2 + c$?

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