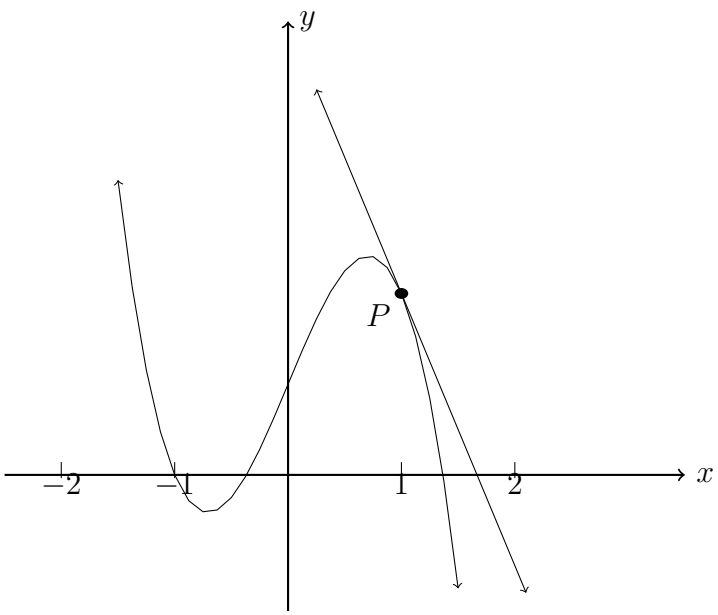
6.6 Do Now: Tangents, systems of equations, frequency tables
Calculator practice E

1. A cubic function $f(x) = -2x^3 + 3x + 1$ is shown on the axes below.



A tangent to the function at $x = 1$ is drawn with the point of tangency P.

(a) Find the coordinates of P. [1]

(b) Write down the derivative of the function, $f'(x)$. [2]

(c) Show that the gradient of the tangent line is -3. [1]

(d) Write down the equation of the tangent line. [2]

(e) Find the coordinates of the two extrema of f. [2]

Working:

Answers:

(a) .....

(b) .....

(c) .....

(d) .....

(e) .....

2. Find the solutions for the system, the value(s) for x such that $f(x) = g(x)$. Sketch the graph to show working.

$f(x) = \frac{1}{2}x^2 + x - 4$ $\qquad$ $g(x) = -\frac{1}{3}x - 3$ [3]

Working:

Answers:

(a) .....

3. The SAT Math scores of a representative 100 North Carolina students are shown below.

Score	$400 \leq x < 450$	$450 \leq x < 500$	$500 \leq x < 550$	$550 \leq x < 600$
Freq	k	24	40	26

(a) Find the value of k. [1]

(b) Write down the modal class. [1]

(c) Estimate the mean $\overline{x}$. [2]

(d) Estimate the standard deviation of the data, σ. [2]

Working:

Answers:

(a) .....

(b) .....

(c) .....

(d) .....