SQA Past paper questions

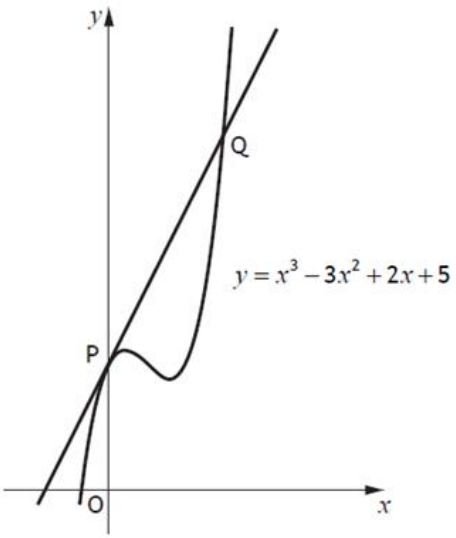
2023 – Paper 2 – Question 2

Find the equation of the tangent to the curve with equation $y = 2x^5 - 3x$ at the point where $x = 1$. 4

Click here for video solution.

2018 – Paper 1 – Question 7

The curve with equation $y = x^3 - 3x^2 + 2x + 5$ is shown on the diagram.



(a) Write down the coordinates of P, the point where the curve crosses the y-axis . 1

(b) Determine the equation of the tangent to the curve at P. 3

(c) Find the coordinates of Q, the point where this tangent meets the curve again. 4

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2015 – Paper 1 – Question 2

Find the equation of the tangent to the curve $y = 2x^3 + 3$ at the point where $x = -2$. 4

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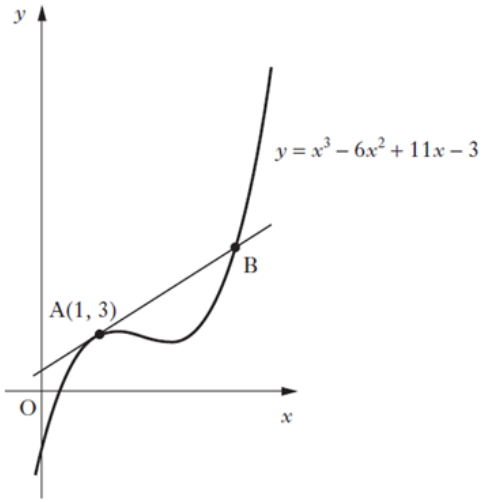
2015 – Paper 1 – Question 21

(*a*) Show that $(x-1)$ is a factor of x^3-6x^2+9x-4 and hence factorise x^3-6x^2+9x-4 fully.

(*b*) The diagram shows the graph with equation $y=x^3-6x^2+11x-3$. **4**



(i) Find the equation of the tangent to the curve $y=x^3-6x^2+11x-3$ at the point A(1, 3). **3**

(ii) Hence find the coordinates of B, the point of intersection of this tangent with the curve. **3**

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2014 – Paper 2 – Question 2

A curve has equation $y=x^4-2x^3+5$.

Find the equation of the tangent to this curve at the point where $x=2$. **4**

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Exemplar – Paper 1 – Question 1

The point P (5,12) lies on the curve with equation $y=x^2-4x+7$.

Find the equation of the tangent to this curve at P. **3**

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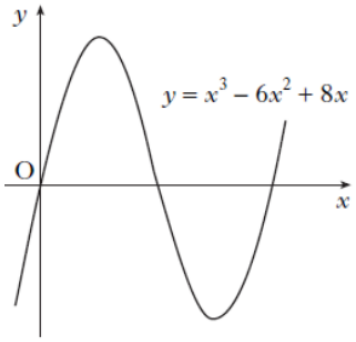
2008 – Paper 1 – Question 22

The diagram shows a sketch of the curve with equation $y = x^3 - 6x^2 + 8x$.

(a) Find the coordinates of the points on the curve where the gradient of the tangent is –1. **5**

(b) The line $y = 4 - x$ is a tangent to this curve at a point A. Find the coordinates of A. **2**



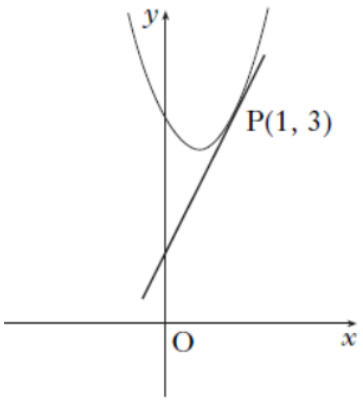
Click here for video solution.

Specimen 1 – Paper 2 – Question 4

The diagram shows a parabola with equation $y = 2x^2 - 2x + 3$.

A tangent to the parabola has been drawn at P(1, 3).

Find the equation of this tangent. **4**



Click here for video solution.

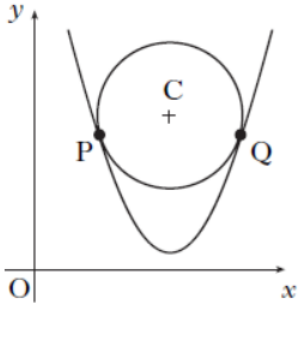
2007 – Paper 2 – Question 5

A circle centre C is situated so that it touches the parabola with equation $y = \frac{1}{2}x^2 - 8x + 34$ at P and Q.

(a) The gradient of the tangent to the parabola at Q is 4. Find the coordinates of Q. **5**

(b) Find the coordinates of P. **2**

(c) Find the coordinates of C, the centre of the circle. **2**

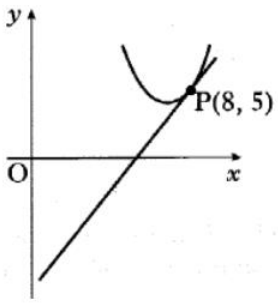


Click here for video solution.

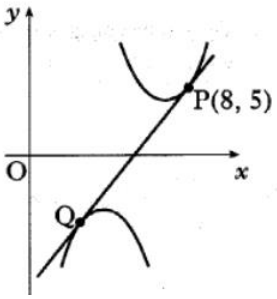
2006 – Paper 2 – Question 3

The parabola with equation $y = x^2 - 14x + 53$ has a tangent at the point P(8, 5).

(*a*) Find the equation of this tangent. **4**



(*b*) Show that the tangent found in (*a*) is also a tangent to the parabola with equation $y = -x^2 + 10x - 27$ and find the coordinates of the point of contact Q. **5**



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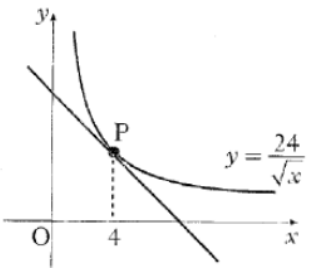
2005 – Paper 2 – Question 6

The diagram shows the graph of $y = \frac{24}{\sqrt{x}}$, $x > 0$.

Find the equation of the tangent at P, where $x = 4$. **6**



Click here for video solution.

2004 – Paper 2 – Question 5

The point P(x, y) lies on the curve with equation $y = 6x^2 - x^3$.

(*a*) Find the value of x for which the gradient of the tangent at P is 12. **5**

(*b*) Hence find the equation of the tangent at P. **2**

Click here for video solution.

2001 – Paper 2 – Question 2

A curve has equation $y = x - \frac{16}{\sqrt{x}}, \quad x > 0.$

Find the equation of the tangent at the point where $x = 4$. **6**

Click here for video solution.

1999 – Paper 1 – Question 9

The point P(–1, 7) lies on the curve with equation $y = 5x^2 + 2$. Find the equation of the tangent to the curve at P. **(4)**

Click here for video solution.