

SQA Past paper questions

2023 - Paper 1 - Question 12

Express $-2x^2 - 12x + 7$ in the form $a(x+b)^2 + c$. 3

Click [here](#) for video solution. 

2022 - Paper 1 - Question 11

Express $2x^2 + 12x + 23$ in the form $p(x+q)^2 + r$. 3

Click [here](#) for video solution. 

2019 - Paper 2 - Question 7

(a) Express $-6x^2 + 24x - 25$ in the form $p(x+q)^2 + r$. 3

(b) Given that $f(x) = -2x^3 + 12x^2 - 25x + 9$,
show that $f(x)$ is strictly decreasing for all $x \in \mathbb{R}$. 3

Click [here](#) for video solution. 

2018 - Paper 2 - Question 4

Express $-3x^2 - 6x + 7$ in the form $a(x+b)^2 + c$. 3

Click [here](#) for video solution. 

2017 - Paper 2 - Question 4

(a) Express $3x^2 + 24x + 50$ in the form $a(x+b)^2 + c$. 3

(b) Given that $f(x) = x^3 + 12x^2 + 50x - 11$, find $f'(x)$. 2

(c) Hence, or otherwise, explain why the curve with equation $y = f(x)$ is strictly increasing for all values of x . 2

Click [here](#) for video solution. 

2016 - Paper 1 - Question 12

The functions f and g are defined on $\mathbb{R}$, the set of real numbers by

$$f(x) = 2x^2 - 4x + 5 \text{ and } g(x) = 3 - x.$$

(a) Given $h(x) = f(g(x))$, show that $h(x) = 2x^2 - 8x + 11$. 2

(b) Express $h(x)$ in the form $p(x+q)^2 + r$. 3

Click [here](#) for video solution. 

2015 - Paper 2 - Question 2

Functions f and g are defined on suitable domains by

$$f(x) = 10 + x \text{ and } g(x) = (1 + x)(3 - x) + 2.$$

(a) Find an expression for $f(g(x))$. 2

(b) Express $f(g(x))$ in the form $p(x+q)^2 + r$. 3

(c) Another function h is given by $h(x) = \frac{1}{f(g(x))}$.

What values of x cannot be in the domain of h ? 2

Click [here](#) for video solution. 

Specimen - Paper 1 - Question 8

$f(x)$ and $g(x)$ are functions, defined on the set of real numbers, such that

$$f(x) = 1 - \frac{1}{2}x \text{ and } g(x) = 8x^2 - 3.$$

(a) Given that $h(x) = g(f(x))$, show that $h(x) = 2x^2 - 8x + 5$. 3

(b) Express $h(x)$ in the form $a(x+p)^2 + q$. 3

(c) Hence, or otherwise, state the coordinates of the turning point on the graph of $y = h(x)$. 1

(d) Sketch the graph of $y = h(x) + 3$, showing clearly the coordinates of the turning point and the y -axis intercept. 2

Click [here](#) for video solution. 

2013 - Paper 1 - Question 21

Express $2x^2 + 12x + 1$ in the form $a(x + b)^2 + c$.

3

Click [here](#) for video solution. 