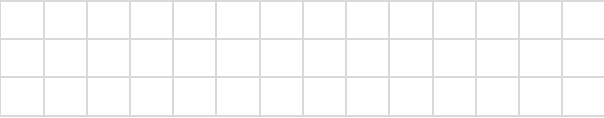
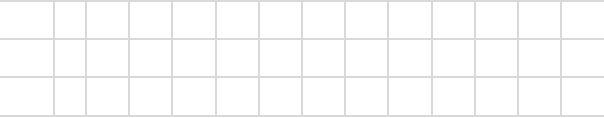
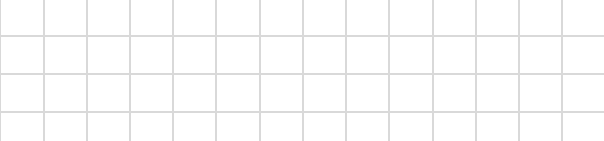
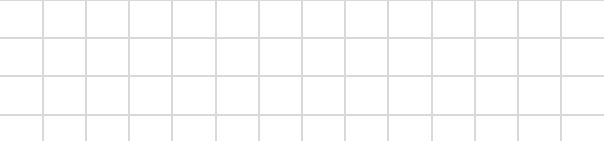
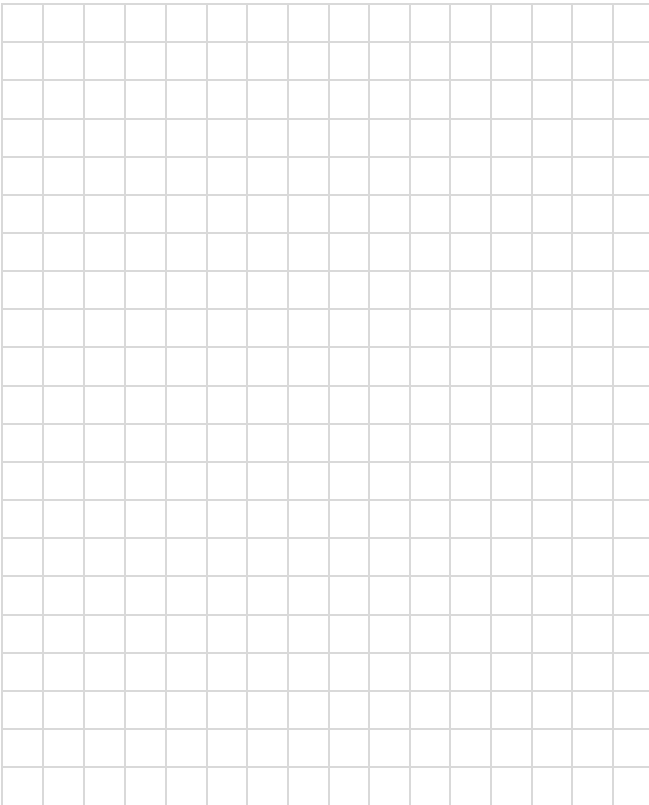
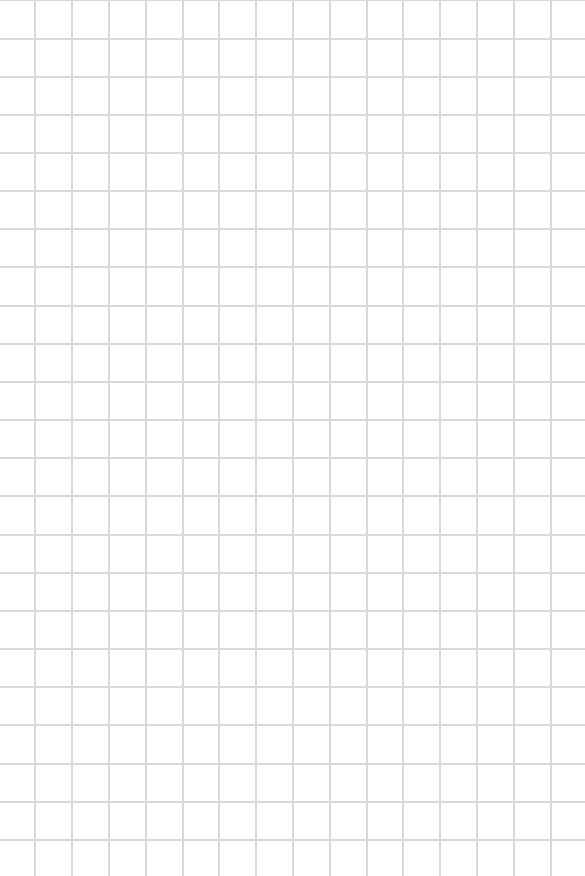


Name of Student: _____

1. Factorise the following:

<p>(i) $6xy + 3x^2y - 9x^2y^3$</p> 	<p>(iii) $6x^2 - 13x - 5$</p> 
<p>(ii) $(x + y)^2 - 25z^2$</p> 	<p>(iv) $27x^3 + 8y^3$</p> 

<p>2. A quadratic function has roots of -2 and -1. It also contains the point (-3, 8). Evaluate the function in the form $ax^2 + bx + c = 0$ where $a, b, c \in \mathbb{Z}$</p> 	<p>3. Prove that $k + 1$ is a root of the function $f(x) = x^2 - 2x - k^2 + 1$, where k is a constant.</p> 
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4. The function $f(x) = 2x^2 + 4x - 4$ can be expressed as $a(x+b)^2 + c$, where $a, b, c \in Z$

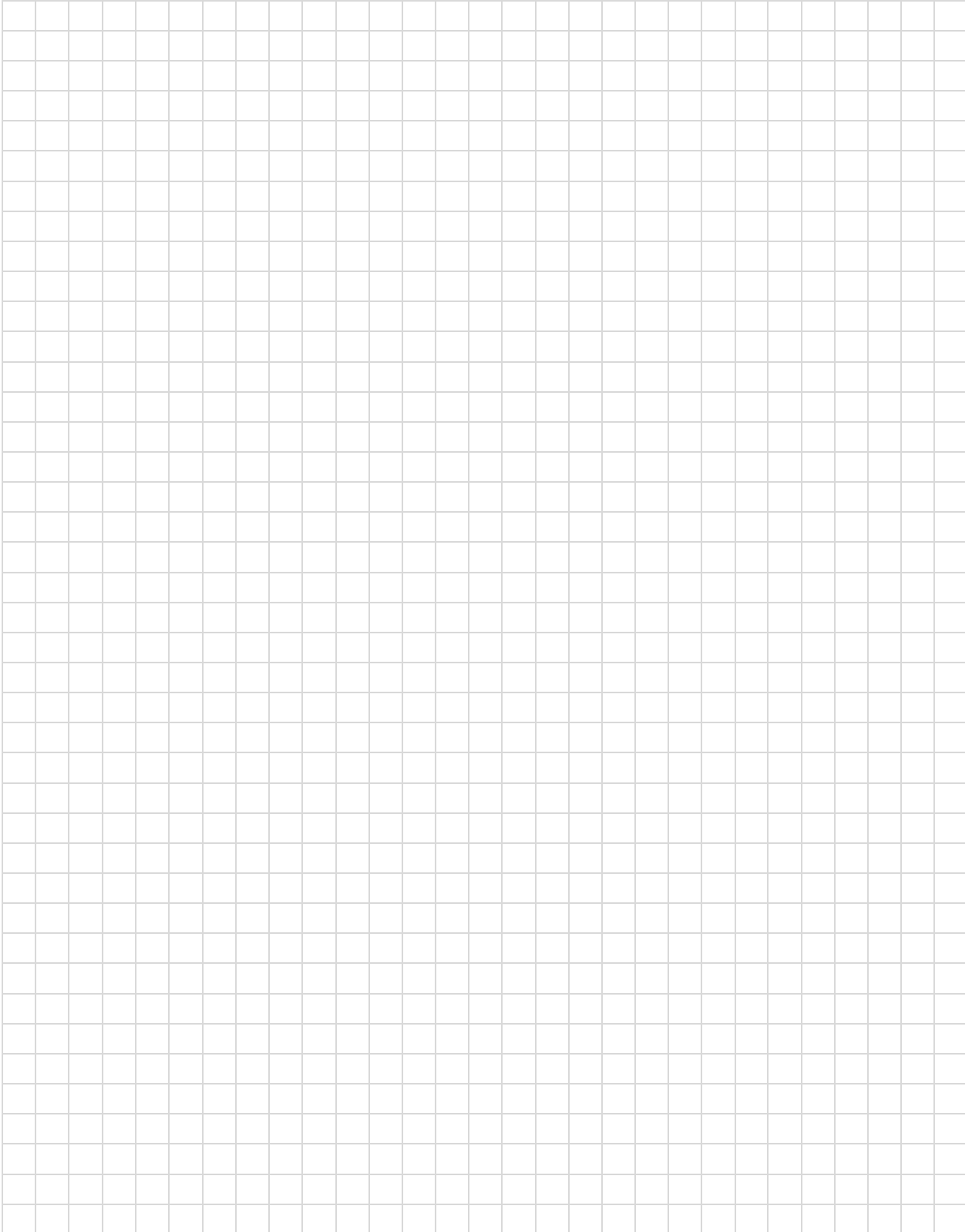
(i) Find the values of a, b and c .

(ii) Hence, find the co-ordinates of the local minimum of the curve.

(iii) Solve the equation $f(x) = 0$, writing your answers in surd form.

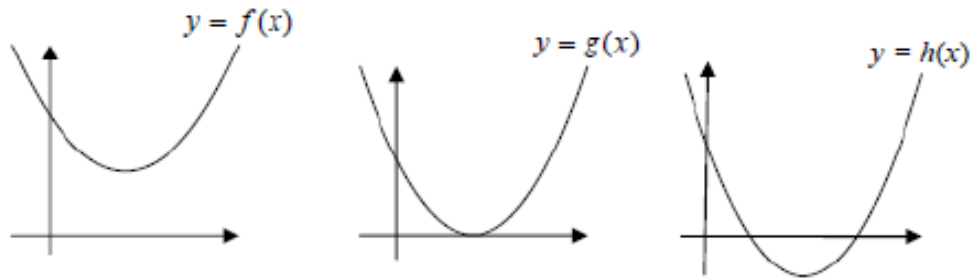
(iv) Where does the graph cut the y-axis?

(v) Draw a rough sketch of $f(x)$ on the graph paper given.



5.(i)

The graphs of three quadratic functions, f , g and h , are shown.



In each case, state the nature of the roots of the function.

Function	Nature of Roots
$f(x)$	
$g(x)$	
$h(x)$	

By evaluating the discriminant, or otherwise, match each curve above to one of the following functions giving a reason for your choice:

(ii)

$$x^2 + 5x + 5, \quad x^2 + 2x + 5, \quad \text{and} \quad x^2 - 4x + 4$$

$f(x) =$ _____ Reason: _____

$g(x) =$ _____ Reason: _____

$h(x) =$ _____ Reason: _____
