Solving Quadratic Inequalities

Name: _____Class: S. 5_____ ( ) Date: _____

Level 1

1. Let $y = x^2 + x - 6$. We can factorize it into $y = (x + 3)(x - 2)$.

(a) (i) For each value of x, find the corresponding value of y.

x	–8	–5	–4	–3	–2	0	1	2	3	4	6
y				0				0			

(ii) When $x < -3$, the values of y are all positive / negative.

(iii) When $-3 < x < 2$, the values of y are all positive / negative.

(iv) When $x > 2$, the values of y are all positive / negative.

(b) (i) When y is negative, i.e. $(x + 3)(x - 2) < 0$, circle the range of values of x.

$x < -3$ $-3 < x < 2$ $x > 2$

(ii) When y is positive, i.e. $(x + 3)(x - 2) > 0$, circle the range of values of x.

$x < -3$ $-3 < x < 2$ $x > 2$

2. Let $y = x^2 - 4x - 12$. We can factorize it into $y = (x - 6)(x + 2)$.

(a) (i) For each value of x, find the corresponding value of y.

x	–7	–5	–3	–2	–1	0	3	6	7	10	12
y				0							

(ii) When $x < -2$, the values of y are all positive / negative.

(iii) When $-2 < x < 6$, the values of y are all positive / negative.

(iv) When $x > 6$, the values of y are all positive / negative.

(b) (i) When y is negative, i.e. $(x - 6)(x + 2) < 0$, write down the range of values of x.

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(ii) When y is positive, i.e. $(x - 6)(x + 2) > 0$, write down the range of values of x.

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Level 2

3. Let $y = -x^2 - 5x + 6$. We can factorize it into $y = -(x^2 + 5x - 6) = -(x - 1)(x + 6)$

(a) (i) For each value of x, find the corresponding value of y.

x	–11	–10	–7	–6	–4	–2	0	1	2	3	5
y											

(ii) When $x < -6$, the values of y are all positive / negative.

(iii) When $-6 < x < 1$, the values of y are all positive / negative.

(iv) When $x > 1$, the values of y are all positive / negative.

(b) (i) When y is negative, i.e. $-(x - 1)(x + 6) < 0$, write down the range of values of x.

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(ii) When y is positive, i.e. $-(x - 1)(x + 6) > 0$, write down the range of values of x.

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4. Let $y = -x^2 + 11x - 24$.

We can factorize it into $y = -(x^2 - 11x + 24) = -(x - 3)(x - 8)$.

(a) (i) For each value of x, find the corresponding value of y.

x	–1	0	1	3	4	5	6	8	9	10	11
y											

(ii) When $x < 3$, the values of y are all positive / negative.

(iii) When $3 < x < 8$, the values of y are all positive / negative.

(iv) When $x > 8$, the values of y are all positive / negative.

(b) (i) When y is negative, i.e. $-(x - 3)(x - 8) < 0$, write down the range of values of x.

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(ii) When y is positive, i.e. $-(x - 3)(x - 8) > 0$, write down the range of values of x.

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5. Go to http://www.geogebra.hk/f4/more_inequality and attempt the "Quiz on Solving Quadratic Inequalities".