

Linear and Quadratic Inequalities – Section Test

(Answers)

1) $x = -1$ does not satisfy $3x + 2 > x$ because $3 \times -1 + 2 = -1$ so it's not true to say that $3 \times -1 + 2 > -1$

2) $x = -2$ does not satisfy $x^2 < 2$ because $-2^2 = 4 > 2$.

3) The smallest such integer is $x = 9$. This is because $3 \times 9 = 27 > 25$ but $3 \times 8 = 24 < 25$.

4)

$$7 - 4x \geq 3$$

$$4 \geq 4x$$

$$1 \geq x$$

5)

$$4x + 1 \geq x - 8$$

$$3x + 1 \geq -8$$

$$3x \geq -9$$

$$x \geq -3$$

6)

$$\frac{x+1}{2} \leq \frac{2-x}{3}$$

$$3(x+1) \leq 2(2-x)$$

$$3x+3 \leq 4-2x$$

$$5x+3 \leq 4$$

$$5x \leq 1$$

$$x \leq \frac{1}{5}$$

7)

$$2(1-2x)-x > 3(x+1)+7$$

$$2-4x-x > 3x+3+7$$

$$2-5x > 3x+10$$

$$2 > 8x+10$$

$$-8 > 8x$$

$$-1 > x$$

$$x < -1$$

The largest integer value which satisfies the equation is -2.

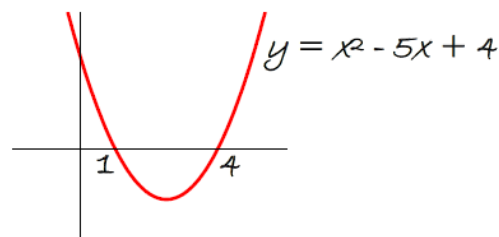
8)

$$x^2 - 5x + 4 < 0$$

$$(x-1)(x-4) < 0$$

From graph, $1 < x < 4$

The integer solutions are 2 and 3.



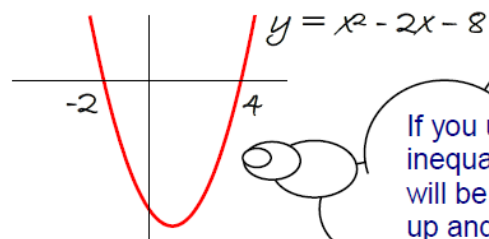
9)

$$8+2x-x^2 < 0$$

$$x^2 - 2x - 8 > 0$$

$$(x-4)(x+2) > 0$$

From graph, $x < -2$ or $x > 4$.



If you use the original inequality, the graph will be the other way up and you will be looking for the parts below the x-axis.

10)

$$6x^2 + x - 2 \geq 0$$

$$(3x+2)(2x-1) \geq 0$$

From graph, $x \leq -\frac{2}{3}$ or $x \geq \frac{1}{2}$

