Quadratic Inequalities Exam Practice

Q1. Solve the inequality:
$x^2 + 2x - 15 < 0$

(3 marks)

Q2. Solve the inequality:
$x^2 - 2x - 80 < 0$

(3 marks)

Q3. Solve the inequality:
$x^2 + 22x + 72 > 0$

(3 marks)

Q4. Solve the inequality:
$2x^2 - x - 28 \geq 0$

(3 marks)

Q5. Solve the inequality:
$3x^2 < 32x - 20$

(3 marks)

Q6. Solve the inequality:
$4a^2 - 6a - 40 \leq 0$

(3 marks)

Q7. Solve the inequality:
$25x^2 + 275x + 750 < 0$

(3 marks)

Q8. a) Show that the inequality:
$5 + \frac{29}{x} > \frac{6}{x^2}$

can be written in the form $5x^2 + 29x - 6 > 0$

(2 marks)

b) Hence solve the inequality $5 + \frac{29}{x} > \frac{6}{x^2}$

(3 marks)

Q9. Solve the inequality:
$4x^2 + 12x - 27 < 7x^2 + 53x - 87$

(4 marks)

Applied Mixed Practice Problems

Q10. Find the range of numbers which satisfy both these inequalities:
$b^2 - 36 < 0$ and $2b^2 - 2b - 12 \geq 0$

(5 marks)

Q11. A cannon ball is fired from a gun which is mounted on a platform above the ground.

The height h of the ball in metres above the ground can be modelled by the quadratic equation, h= $-x(x-5)+1.5$, where t is the time in seconds after it is launched.

a) State the height of the platform.

(1 mark)

b) According to the model, how many seconds does the ball spend above a height of 3.75 meters above the ground?

(4 marks)

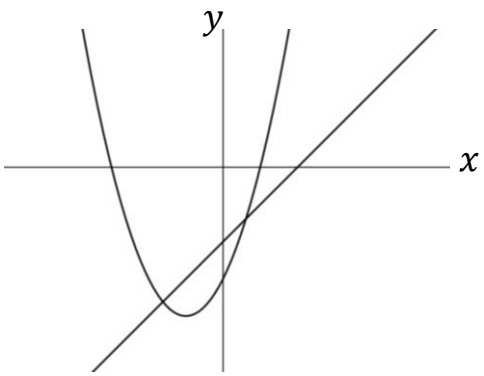
Q12. Find the range of whole numbers which satisfy the inequality
$5y^2 - 12y + 6 \leq 0$

(4 marks)

Q13. Below is a sketch of the line $x - y = 2$ and the curve $y = x^2 + 2x - 3$.

a) Find an equality in x which describes when the curve is exactly below the line.

(2 marks)



b) Hence, or otherwise, find the set of values of x for which the curve is under the line. Give your answers to 1 decimal place.

(3 marks)