

1.4 Inequalities

Question Paper

Course	Edexcel IAL Maths: Pure 1
Section	1. Algebra & Functions
Topic	1.4 Inequalities
Difficulty	Medium

Time allowed: 50

Score: /42

Percentage: /100

Question 1

Solve the inequality $3x + 4 \leq 5(x - 1)$.

[3 marks]**Question 2**

Solve the inequality $x^2 - 5x > 6$.

[4 marks]**Question 3**

The equation $kx^2 + 2kx + 4 = 0$, where k is a constant, has two distinct real roots.
Find the possible value(s) of k .

[4 marks]

Question 4

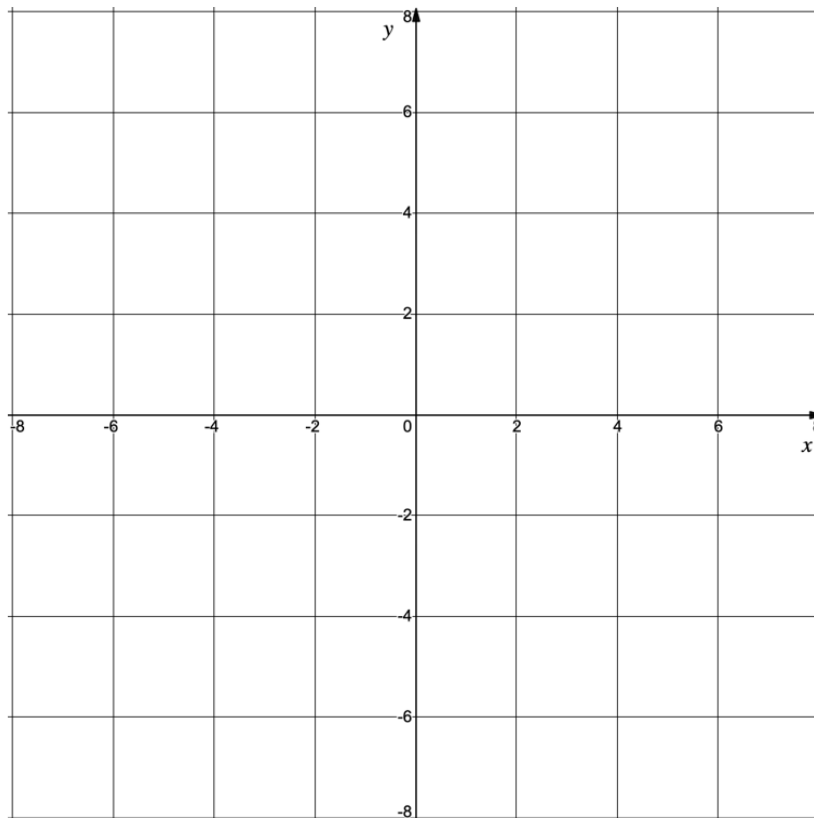
On the axes below show the region satisfied by the inequalities

$$x + 2y > 3$$

$$y \leq x + 4$$

$$y + 3x < 8$$

Label this region R.



[5 marks]

Question 5

Find the values of x that satisfy the inequalities

$$x^2 + 3x > 4$$

$$4x + 1 > 4$$

[5 marks]

Question 6

Solve the inequality $-2 \leq 3x - 4 \leq 5$, giving your answer in set notation.

[4 marks]

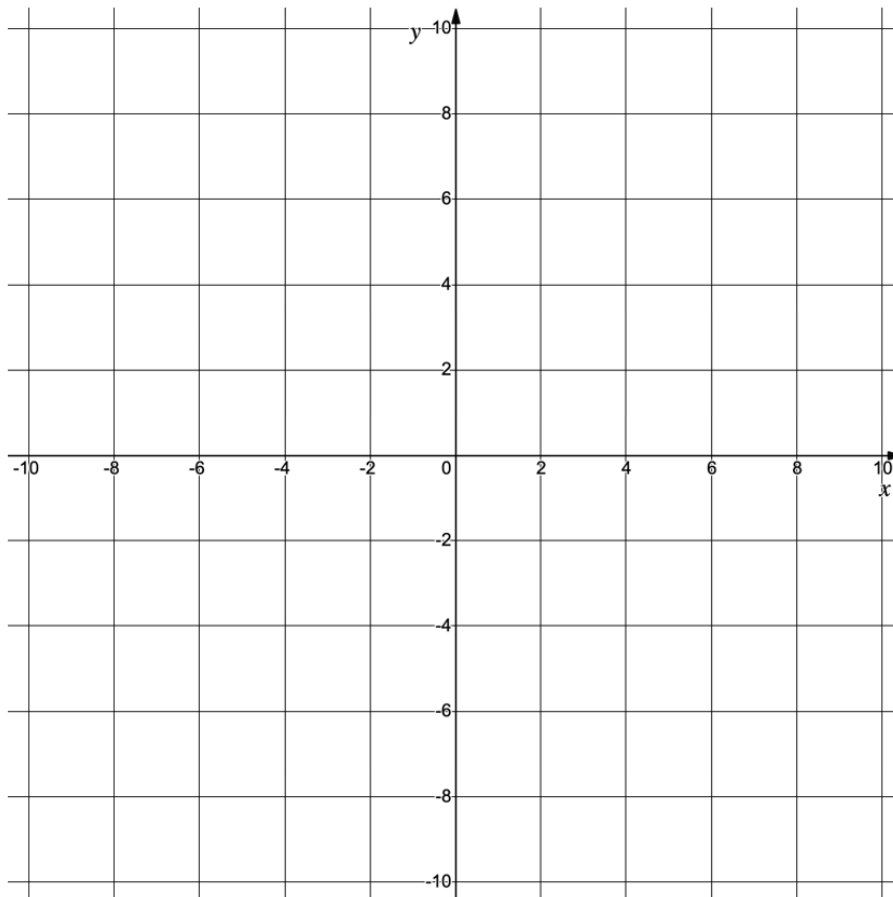
Question 7

The cross section of a tunnel is in the shape of the region defined by the inequalities

$$y \leq 5 - \frac{x^2}{5}$$

$$y \geq 0$$

(a) On the axes below show the region satisfying the inequalities



[3 marks]

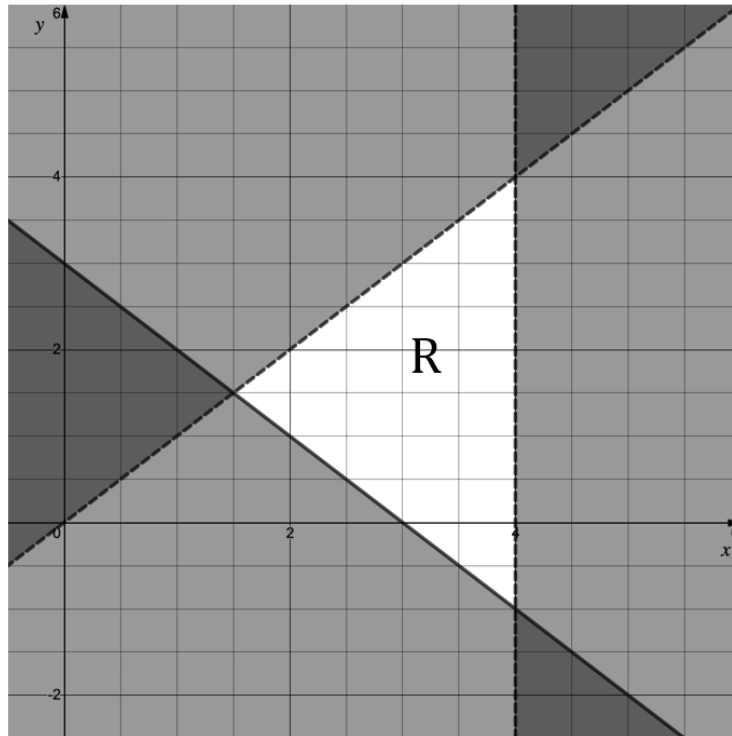
Question 7

(b) Given that x and y are in metres write down the height and the maximum width of the tunnel.

[2 marks]

Question 8

Write down the inequalities that define the region R shown in the diagram below.



[4 marks]

Question 9

The total cost to a company manufacturing c cables is $(100 + 5c)$ pence.

The total income from selling all c cables is $(30c - c^2)$ pence.

What is the minimum number of cables the company needs to sell in order to recover their costs?

[4 marks]

Question 10

A stone is projected vertically upwards from ground level.

The distance above the ground, d m at t seconds after launch, is given by

$$d(t) = 12t - 4.9t^2$$

How long does the stone remain 2 m above the ground?

[4 marks]