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PURE MATH

ALGEBRA AND FUNCTION

Level & Board	EDEXCEL (A-LEVEL)
TOPIC:	QUADRATICS
PAPER TYPE:	QUESTION PAPER 4
TOTAL QUESTIONS	8
TOTAL MARKS	42

Questions

Q1.

The equation $kx^2 + 4x + (5 - k) = 0$, where k is a constant, has two different solutions for x.

(a) Show that k satisfies

$$k^2 - 5k + 4 > 0.$$

(4)

(b) Hence find the sets of possible values of k.

(4)

(Total for question = 8 marks)

Q2. The equation $kx^2 + 4kx + 3 = 0$, where k is a constant, has no real roots. Prove that

$$0 \leq k < \frac{3}{4}$$

(4)

(Total for question = 4 marks)

Q3.

The quadratic equation $kx^2 + (k - 3)x + 1 = 0$ has two equal real roots. Find the possible value of k.

(4)

(Total for question = 4 marks)

Q4.

Find the value of k so that the equation has equal root

$(k + 3)x^2 + 2(k + 3)x + 4 = 0$

(Total for question = 8 marks)

Q5.

The quadratic equation $x^2 + 3px + p = 0$, where p is a non-zero constants.

Find the value of p.

(4)

(Total for question = 4 marks)

Q6.

The equation $kx^2 + 4x + (5 - k) = 0$, where k is a constant, has 2 different real solutions for x.

Show that k satisfies

$$kx^2 - 5k + 4 > 0.$$

(5)

(Total for question = 5 marks)

Q7. Given that the equation $2qx^2 + qx - 1 = 0$, where q is a constant, has no real roots,

(a) Show that $q^2 + 8q < 0$.

(2)

(b) Hence find the set of possible values of q.

(3)

(Total for question = 5 marks)

Q8.

How do you express $4 - 3x - x^2$ in the form of $a-(x + b)^2$?

(4)

(Total for question = 4 marks)

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