

The Discriminant Exam Questions (from OCR 4721)**Q1, (Specimen Q3)**

The quadratic equation $x^2 + kx + k = 0$ has no real roots for x .

- (i) Write down the discriminant of $x^2 + kx + k$ in terms of k . [2]
- (ii) Hence find the set of values that k can take. [4]
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Q2, (Jun 2007, Q4)

- (i) Find the discriminant of $kx^2 - 4x + k$ in terms of k . [2]
- (ii) The quadratic equation $kx^2 - 4x + k = 0$ has equal roots. Find the possible values of k . [3]
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Q3, (Jan 2010, Q10)

The quadratic equation $kx^2 - 30x + 25k = 0$ has equal roots. Find the possible values of k . [4]

Q4 (Jan 2013, Q8)

The quadratic equation $kx^2 + (3k - 1)x - 4 = 0$ has no real roots. Find the set of possible values of k . [7]

Q5, (Jun 2015, Q8)

- (i) Sketch the curve $y = 2x^2 - x - 3$, giving the coordinates of all points of intersection with the axes. [4]
- (ii) Hence, or otherwise, solve the inequality $2x^2 - x - 3 > 0$. [2]
- (iii) Given that the equation $2x^2 - x - 3 = k$ has no real roots, find the set of possible values of the constant k . [3]
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Q6, (Jun 2016, Q9)

Find the set of values of k for which the equation $x^2 + 2x + 11 = k(2x - 1)$ has two distinct real roots. [7]
