

Discriminant

Question Paper

Level	A Level
Subject	Maths
Exam Board	OCR
Topic	Polynomials
Sub Topic	Discriminant
Booklet	Question Paper

Time Allowed: 36 minutes

Score: /30

Percentage: /100

- 1 (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]
- 2 (i) Calculate the discriminant of each of the following:
- (a) $x^2 + 6x + 9$,
- (b) $x^2 - 10x + 12$,
- (c) $x^2 - 2x + 5$. [3]
- 3 The quadratic equation $kx^2 + (3k - 1)x - 4 = 0$ has no real roots. Find the set of possible values of k . [7]
- 4 The quadratic equation $kx^2 - 30x + 25k = 0$ has equal roots. Find the possible values of k . [4]
- 5 (i) Calculate the discriminant of $-2x^2 + 7x + 3$ and hence state the number of real roots of the equation $-2x^2 + 7x + 3 = 0$. [3]
- (ii) The quadratic equation $2x^2 + (p + 1)x + 8 = 0$ has equal roots. Find the possible values of p . [4]
- 6 (i) Express $3x^2 + 9x + 10$ in the form $3(x + p)^2 + q$. [3]
- (ii) State the coordinates of the minimum point of the curve $y = 3x^2 + 9x + 10$. [2]
- (iii) Calculate the discriminant of $3x^2 + 9x + 10$. [2]