



Name: _____ () Class: _____ Date: _____

Duration: 1 hour

Marks: 40

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- Answer all questions.
 - Omission of essential working will result in loss of marks.
 - The number of marks for each question or part question is shown in [].
 - The use of calculators is allowed.
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- 1 The line $y + 3x = 1$ intersects the curve $x^2 + 2xy + 2y^2 = 25$ at the points A and B .
Find the coordinates of A and B . [4]
- 2 (i) Express $y = -x^2 - x + 6$ in the form $y = k - (x - h)^2$, where h and k are constants. [2]
- (ii) Sketch the graph of $y = -x^2 - x + 6$, showing clearly the turning point, x - and y -intercepts. [3]
- 3 Using a suitable substitution, solve the equation $3^{2x+1} - 28(3^x) + 9 = 0$. [4]
- 4 (a) Solve the equation $\sqrt{x+3} = 2 + \sqrt{5}$. [3]
- (b) Without using a calculator, find the values of the integers a and b for which the solution $x\sqrt{20} + \sqrt{27} = \sqrt{80} - x\sqrt{12}$ is $\frac{a+b\sqrt{15}}{4}$. [5]
- 5 (a) Solve the inequality $(2x - 1)^2 - 6\frac{1}{4} > 0$.
Represent its solution on a number line. [4]
- (b) Find the range of values of c for which $x^2 + 7x - 9 > 8x + c$ for all values of x . [3]
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- 6 The equation of a curve is $y = (k - 3)x^2 - kx + \frac{k}{2}$, where k is a constant.
- (i) Find the range of values of k for which the curve cuts the x -axis at two distinct points and has a minimum point. [4]
- (ii) In the case where $k = 4$, find the values of c for which the line $y = x + c$ will meet the curve. [3]
- 7 A set of flash cards consists of a square card of sides x cm and a rectangular card with dimensions x cm by y cm, where $x < y$.
- Given that the sum of the areas of the square and the rectangle is 84 cm^2 and the sum of their perimeters is 52 cm , form two simultaneous equations in terms of x and y .
- Hence, find the dimensions of the rectangular card. [5]

End of Test

