



basic education

Department
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS NATIONAL SENIOR CERTIFICATE EXAMINATIONS

MATHEMATICS 501

2015

Time: 150

100% / 100 marks

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10/10/15

100/1001

QUESTION 1

- 1.1 Solve for x . (2)
- 1.1.1 $x^2 + 4x + 4 = 0$ (2)
- 1.1.2 $x^2 + 2x + 4 = 0$ (2) (Leave answer in terms of $\sqrt{b^2 - 4ac}$)
- 1.1.3 $x^2 + 4 = 0$ (2)
- 1.2 Given: $y = \frac{x^2 + 1}{x}$ (2)
- 1.2.1 Solve for x . (2)
- 1.2.2 Solve for x if $x^2 + 2x + 4 = 0$. (2)

1.3 Without using a calculator, calculate the value of $\sqrt{\frac{16}{25} + \frac{9}{16}}$. (2)

1.4 Solve for x and y simultaneously:
 $3x + y = 11$ and $\frac{1}{x} + \frac{1}{y} = \frac{1}{2}$. (4)

QUESTION 2

- 2.1 The first term of an arithmetic sequence is 11 and the 10th term is 48. (2)
- 2.1.1 Determine the common difference of the sequence. (2)
- 2.1.2 Determine the number of terms in the sequence if the last term of the sequence is 95. (2)
- 2.1.3 Determine the sum of the first 40 terms in the sequence. (2)
- 2.2 The sets A , B and C are represented as follows. (4)
- 2.2.1 Write down the Venn diagram of the number pattern. (2)
- 2.2.2 Determine the $\mathcal{P}(A)$ sets of the number patterns. (2)
- 2.2.3 Determine the number of sets other than empty number patterns:
 $\mathcal{P}(A \cup B) \cap \mathcal{P}(B \cup C) \cap \mathcal{P}(A \cup C)$. (2)

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