

QUESTION 1

1.1 State whether the following numbers are rational or irrational. (5)

S1001

1.1.1 $-0,01572$

1.1.2 $\frac{\sqrt{64}}{\sqrt[3]{8}}$

1.1.3 $\sqrt{5}$

1.1.4 $1,3\bar{5}$

1.1.5 $\sqrt[3]{94}$

1.2 Write the recurring decimal $0,8\bar{1}$ as a fraction (3)

S1001

1.3 Simplify the following expression: (3)

$(2a - 3b)(4a^2 + 6ab + 9b^2)$

S1003

[11]

QUESTION 2

Factorise the following expressions:

2.1 $3x^3 - 12x$ (3)

S1004+5

2.2 $x(x - 8) + 15$ (3)

S1006(2)

2.3 $6a^2 + 2a - 3ab - b$ (3)

S1004

2.4 $8b^3 + 27$ (3)

S1005

2.5 $6x^2 + x - 15$ (3)

S1006

[15]

QUESTION 3

Solve the following equations:

3.1 $8(x + 1) - 2x = 7(3 - x)$ (4)

S1013

3.2 $\frac{3}{x-2} + \frac{3}{x+2} = \frac{2}{x^2-4}$ (4)

S1013

3.3 $x(x - 10) = x - 10$ (4)

S1015

3.4 $x + 3y = 5$
 $2x - 2y = 2$ (4)

S1016

3.5 If $\frac{x+a}{x-b} = 2$ determine x in terms of a and b . (4)

S1014

3.6 $\frac{x}{4} + 15 < \frac{5x}{3} - 2$ (4)

S1018

[24]

QUESTION 4

Simplify the following:

4.1 $\frac{5ab - 15b}{4a - 12} \div \frac{6b^2}{a + b}$

4.3 $\frac{5}{y - 2} - \frac{1}{y - 3}$

(4)

S1007

(4)

S1008

[8]**QUESTION 5**

Simplify the following:

5.1 $2^{3x} \times 2^{4x}$

5.2 $6p^0 \times (7p)^0$

5.3 $\left(\frac{a^2b^3}{ab^5}\right)^3$

5.4 $\frac{3^{x-2} + 3^{x-1}}{3^x + 3^{x+1}}$

5.5 $\frac{2^{2n} \times 4^n \times 2}{16^n}$

5.6 $\frac{5^{2x-1} \cdot 9^{x-2}}{15^{2x-3}}$

(1)

S1009

(3)

S1009

(3)

S1009

(3)

S1011

(3)

S1010

(4)

S1010

[17]

Total: 75 Marks