STANMORE SECONDARY SCHOOL

FIRST CONTROL TEST - 2021

MATHEMATICS - GRADE 10

TIME : 90 MINUTES **MARKS** : 75

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QUESTION 1

1.1 Show that the decimal $3,2\dot{1}\dot{8}$ is a rational number. (4)

1.2 Determine, without the use of a calculator, between which two integers the number $\sqrt{30}$ will lie. (4)

[8]

QUESTION 2

Expand and simplify:

2.1 $(a-2)^2 - a(a+4)$ (3)

2.2 $(9x^2 + 12xy + 16y^2)(3x - 4y)$ (4)

2.3 $\frac{9^x \times 10^{x-2}}{6^{x-1} \times 15^x}$ (6)

[13]

QUESTION 3

Factorise the following expressions completely:

3.1 $2x^2 - x - 15$ (3)

3.2 $\frac{1}{27}x^3 + 216$ (5)

3.3 $m^3 - m^2 - mn^2 + n^2$ (4)

3.4 $\frac{5 \cdot 2^n - 2^n}{2^{n+1}}$ (4)

[16]

QUESTION 4

Simplify the following expressions, assuming all denominators are non-zero:

4.1 $\dfrac{4x^2-1}{3x^2+10x+3} \div \dfrac{6x^2+5x+1}{4x^2+11x-3} \times \dfrac{9x^2+6x+1}{8x^2-6x+1}$ (7)

4.2 $\dfrac{x^2-3x+9}{x^3+27} + \dfrac{x-2}{x^2+4x+3} - \dfrac{1}{x-2}$ (7)

[14]

Question 5

Solve for x :

1.1. $4x + 3 = -5$ (3)

1.2. $(x+3)^2 = 49$ (4)

1.3. $3^{-x} - 2 = 79$ (4)

1.4 $-3 < 2 - 5x < 7$ (4)

1.5 $xm = 2x + 3y$ (3)

[18]

Question 6

Solve for x and y.

$2x + 3y = 7$ *and* $x - y = 1$ **[6]**

TOTAL MARKS = 75