



Name: _____ () Class: _____ Date: _____

Term 3 A.Math Class Test (Revision Paper 1)

Answer all the questions.

Question 1:

(a) Given that $\log_b (x^3 y) = p$ and $\log_b \left(\frac{y}{x^2} \right) = q$, express $\log_b \sqrt{xy}$ in terms of p and q . [6]

(b) Solve the equation $\log_x 8 + 2 \log_2 x = 7$. [4]

Question 2:

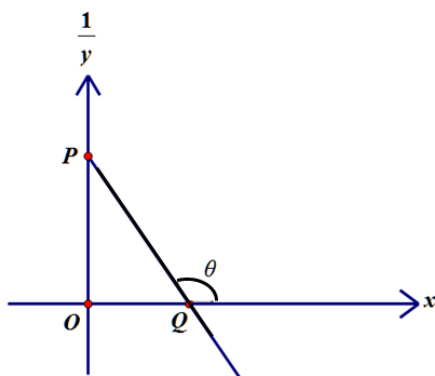
(i) Use the substitution $y = 2^x$ to express the equation $2^{3x+1} + 7(2^x) = 4 - 4^x$ as a cubic equation in y . [1]

(ii) Show that $y = \frac{1}{2}$ is the only real solution of this equation. [4]

(iii) Hence solve the equation $2^{3x+1} + 7(2^x) = 4 - 4^x$. [1]

Question 3:

The two variables x and y are related by the equation $2y - 5xy = 1$. The diagram shows part of a straight line graph obtained by plotting $\frac{1}{y}$ against x .



Find

(i) the coordinates of P and Q , [3]

(ii) the value of θ in degrees. [2]

Question 4:

The expression $ax^3 + x^2 + bx$ has remainder 3 when it is divided by $x + 1$. When the expression is divided by $x - 2$, the remainder is 6. Find the remainder when the expression is divided by $x - 3$. [4]

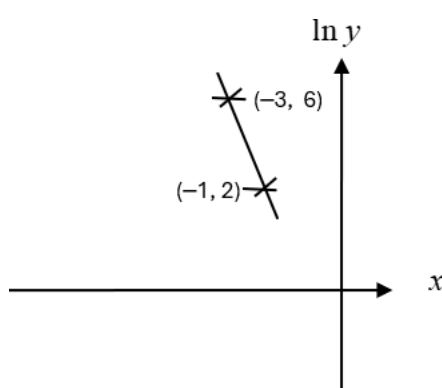
Question 5:

- (i) Factorise the expression $3x^3 - 8x^2 - 5x + 6$ completely. [3]
(ii) Hence, sketch the graph of $y = 3x^3 - 8x^2 - 5x + 6$, indicate clearly the coordinates of the x -intercepts and y -intercept. [3]

Question 6:

The figure shows part of a straight line graph obtained by plotting values of the variables indicated.

Express y as a function of x . [3]

**Question 7:**

Using long division, find the quotient and remainder when $x^5 - 3x^4 + 2x^3 - 2x^2 + 3x + 1$ is divided by $2x^2 + 3$. [3]