



Name: _____ () Class: _____ Date: _____

Term 3 A.Math Class Test (Revision Paper 2)

Answer all the questions.

Question 1:

It is given that $h(x) = (3x + 1)(x + 5)(2x - 1)$.

- (a) Express $h(x)$ in the form $Ax^3 + Bx^2 + Cx + D$, giving the values of the constants A , B , C and D . A=6, B=29, C=-6, D=-5 [2]
- (b) Find the value of the constant a , given that $(x + 3)$ is a factor of $h(x) + ax$. [2]

$$a = 37 + \frac{1}{3}$$

Question 2:

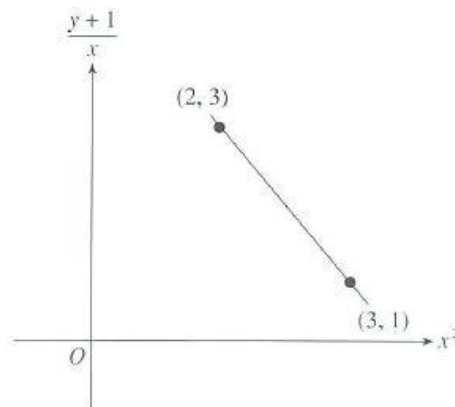
Given that $P(x) = 3x^3 - 7x^2 - x - 55$ and $Q(x) = 6x^3 - 5x^2 - 3x + 2$, find the value(s) of q if

$$P(q) = Q(q). \quad [4]$$

$$q = -3$$

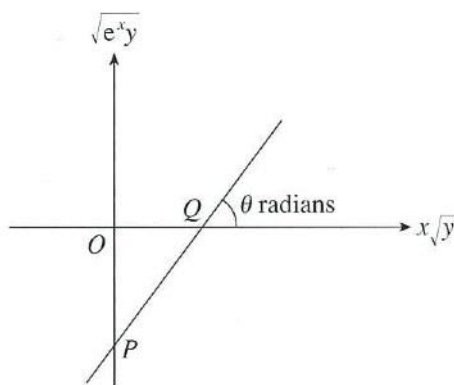
Question 3:

The figure shows part of a straight line graph obtained by plotting $\frac{y+1}{x}$ against x^2 . Express y in terms of x . [3]



Question 4:

In the figure, x and y are related by $e^{\frac{1}{2}x} = 2x - \frac{3}{\sqrt{y}}$.



Find

- (a) the value of θ , $\arctan(2)=1.11 \text{ rad}$ [3]
 (b) the coordinates of P and Q . $P(0,-3) Q(1.5,0)$ [2]

Question 5:

Given that x and y are known to be related by the equation $\sqrt[3]{y} = st^x$ where s and t are constants. Express the equation in a form suitable for drawing a straight line graph. [3]

draw $\ln(y)/3$ against x

Question 6:

Solve $\log_3(x+6) = 2 - \log_3(x-4) + \log_9 x^2$, giving your answers in exact values. [5]

$$x = \frac{7 + \sqrt{145}}{2} \quad \text{or} \quad x = \frac{7 - \sqrt{145}}{2}$$

Question 7:

Given that $(\log_3 7)(\log_7 k) = 2$, find the value of k . [2]

$$k=9$$

Question 8:

$$(x+1)(-3x+1)(x-3)$$

- (a) (i) Solve $-3x^3 + 7x^2 + 7x - 3 = 0$, showing your working clearly. [4]
 (ii) Sketch the graph of $y = -3x^3 + 7x^2 + 7x - 3$. Indicate clearly, the coordinates of the x -intercept(s) and y -intercept. [3]
- (b) When a polynomial $P(x)$ is divided by $(x-1)$ and $(x-2)$, the remainders are 2 and 3 respectively. Find the remainder when $P(x)$ is divided by $(x-1)(x-2)$. [4]

$$x+1$$