- 10 The curve C with equation $y = \frac{6-3x}{x-4}$ where $x \ne 4$, crosses the x-axis at the point P and the y-axis at the point Q
 - (a) Find the coordinates of
 - (i) *P*
- (ii) *Q*

(2)

- (b) Write down an equation of the asymptote to C which is
 - (i) parallel to the y-axis
- (ii) parallel to the *x*-axis

(2)

(c) Sketch C showing clearly the asymptotes and the coordinates of the points P and Q

(3)

The line *L* is the normal to *C* at the point on *C* where x = 2

(d) Find an equation of L

(6)

The line L intersects C again at the point R

(e) Find the x coordinate of R

(3)



	Question 10 continued
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Question 10 continued	

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11 The roots of a quadratic equation E are α and β where $\alpha > \beta > 0$

Given that $\alpha - \beta = 2\sqrt{6}$ and $\alpha^2 + \beta^2 = 30$

(a) show that

(i)
$$\alpha\beta = 3$$

(4)

(ii)
$$\alpha + \beta = 6$$

(2)

- (b) Without solving E
 - (i) find the value of $\alpha^4 + \beta^4$

(2)

(ii) find the exact value of $\alpha^4 - \beta^4$

(2)

Given that $\alpha^4 = P + Q\sqrt{6}$ where P and Q are positive integers,

(c) find the value of P and the value of Q

(2)



	Question 11 continued
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	(Total for Orgation 11 is 12 also)
	(Total for Question 11 is 12 marks) TOTAL FOR PAPER IS 100 MARKS