10	$f(x) = x^2 + (k-3)x + 4$		
	The roots of the equation $f(x) = 0$ are $\alpha$ and $\beta$		
	(a) Find, in terms of $k$ , the value of $\alpha^2 + \beta^2$		
	Given that $4(\alpha^2 + \beta^2) = 7 \alpha^2 \beta^2$	(3)	
	(b) without solving the equation $f(x) = 0$ , form a quadratic equation, with integer		
	coefficients, which has roots $\frac{1}{\alpha^2}$ and $\frac{1}{\beta^2}$	(5)	
	(c) find the possible values of $k$ .		
		(5)	

Question 10 continued		



Question 10 continued			

Question 10 continued		
	(Total for Question 10 is 13 marks)	



11	1 The curve C has equation $5y = 4(x^2 + 1)$ . The coordinates of the point P on the curve are $(p, 8)$ , $p > 0$	
	The line <i>l</i> with equation $5y - 24x + q = 0$ is the tangent to <i>C</i> at <i>P</i> .	
	(a) (i) Show that $p = 3$	
	(ii) Find the value of $q$	(4)
	(b) Find an equation, with integer coefficients, for the normal to <i>C</i> at <i>P</i> .	(5)
	(c) Find the exact value of the area of the triangle formed by the tangent to <i>C</i> at <i>P</i> , the normal to <i>C</i> at <i>P</i> and the <i>x</i> -axis.	(3)
	The finite region bounded by $C$ , the tangent to $C$ at $P$ , the $x$ -axis and the $y$ -axis is rotated through $360^{\circ}$ about the $x$ -axis.	d
	(d) Find, to 2 significant figures, the volume of the solid generated.	(6)

Question 11 continued		



Question 11 continued	

Question 11 continued		



Question 11 continued	
	(Total for Question 11 is 19 montes)
	(Total for Question 11 is 18 marks)  TOTAL FOR PAPER IS 100 MARKS

