PART 4

PAST EXAMINATION QUESTIONS: PARAMETRIC + CARTESIAN EQNS.

1. Obtain the cartesian equation of the curve whose parametric equations are $x = \frac{1}{t}$, $y = 2t(t+1)$. (J87/P2/8a)

2. The parametric equations of a curve are $x = t^2 - 2t$, $y = 2t - 1$. (a) Find the co-ordinates of the point where the curve intersects the x-axis. (b) Obtain the Cartesian equation of the curve. (J88/P2/8)

3. Find the Cartesian equation of the curve which is defined parametrically by $x = \frac{t}{2} - 1$, $y = t^2$. (J89/P2/8bi)

4. Find the Cartesian equation of the straight line whose parametric equations are $x = 2t - 4$, $y = t - 1$. Given that this line can also be represented by the parametric equations $x = \frac{A}{T-1}$, $y = \frac{T}{T-1}$, where A is a constant, find (i) the value of A, (ii) the value of T at the point where $t = 4$. (N89/P2/8b)

5. The straight line $2x + y = 7$ meets the curve whose parametric equations are $x = t^2 + 2$, $y = 2t - 1$ at the points A and B. Calculate the co-ordinates of A and of B. (J91/P2/8b)

6. Find the cartesian equation of the curve defined by the parametric equations $x = \frac{12}{t}$, $y = 4t$. (J93/P2/8bi)

7. The line whose parametric equations are $x = t - 2$, $y = 2t + 1$ meets the curve $xy = 12$ at P and Q. Find the value of t at P and at Q. (N93/P2/8a)

8. A curve has parametric equations $x = \frac{t-2}{t-1}$, $y = t - 3$. (i) Given that this curve meets the line $y = 3x - 1$ at the points A and B, find the length of AB. (ii) Find the cartesian equation of the curve, expressing y in terms of x. (J94/P2/8a)

9. A curve is represented parametrically by $x = 1 + 3t$, $y = t^2 + 7t$. Obtain the cartesian equation of the curve. (J95/P2/8iv)

10. The curve whose parametric equations are $x = p^2 + 1$, $y = p - 2$ intersects the line $x - 4y = 6$ at the points A and B. (a) Obtain the equation in p which gives the value of the parameter at A and at B. (b) Find the coordinates of A and of B. (N96/P1/7a)

1. $y = \frac{2x}{(x-1)^2}$

2. (a) $(-\frac{3}{4}, 0)$

   (b) $4x = (y+1)(y-3)$

3. $y = 4(x+1)^2$

4. $x = 2y - 2$

   (i) 2 (ii) $1\frac{1}{2}$

5. (6, –5)(3, 1)

6. $xy = 48$

7. –2 or $3\frac{1}{2}$

8. (i) 2·11 (ii) $y = \frac{1-2x}{x-1}$

9. $9y = (x-1)(x+20)$

10. (a) $p = 1$ or 3

    (b) $A = (2, -1)$ and $B = (10, 1)$