## SMASK RECESS TERM S.5 PURE MTC ASSIGNMENT

## ALGEBRA

- 1. Prove that  $\frac{1+\sqrt{3}+\sqrt{5}}{1-\sqrt{3}+\sqrt{5}} = \frac{12\sqrt{5}-2\sqrt{15}+14\sqrt{3}}{11}$ .
- 2. Solve the simultaneous equations  $\frac{x^2 + y^2 = 5}{x y = 2}$

$$10x + 3y - 5z = 1$$

- 3. Solve the simultaneous equations 2x 5y + 10z = 84x + y + 15z = 4
- 4. Show that  $\log_b x = \frac{\log_a x}{\log_a b}$ , hence solve the equations

(i) 
$$\log_{32} x = -\frac{3}{5}$$

- (i)  $\log_2 4x = 8\log_2 2$
- 5 The second, fifth and eleventh terms of an A.P are in a G.P. The seventh term is 4. Find the
  (i) First term and common difference.
  - (ii) Common ratio of the G.P
- 6. Given that the 3<sup>rd</sup> term of a G.P is 27 and the 5<sup>th</sup> term is 243. Find the first term, common ratio and sum of the first 5 terms.

7. Solve the equation 
$$\sqrt{2y-5} = 1 + \sqrt{y-3}$$
.

8. Solve the equation 
$$\sqrt{3x} + \frac{1}{\sqrt{3x}} = 4$$

- 9. The first term of a G.P is A and the sum of the first 3 terms is  $\frac{7}{4}A$ .
  - (i) Show that there are two possible progressions.
  - (ii) Given that A = 4, find the next two terms of each progression.
- 10. The second and third terms of a G.P 24 and  $12(\alpha + 1)$  respectively. Find  $\alpha$  if the sum o the first 3 terms is 76.
- 11. Solve the equation  $\log_x 32 \log_{256} x = 1$

## GEOMETRY

- 1. Given that the line x-3y = 0 interests the curve  $y = x x^3$  at points P, O and Q. Find the coordinates of P, O and Q.
- 2. Find the equations of the lines through (2,3) which make an angle of  $135^{\circ}$  with the line 4x 3y + 5 = 0.
- 3. The perpendicular bisector of the line joining the points (3,2) and (5,6) meets the x axis at A and y axis at B, prove that distance  $AB = 6\sqrt{5}$ .