SMASK RECESS TERM S.5 PURE MTC ASSIGNMENT

ALGEBRA

1. Prove that $\frac{1+\sqrt{3}+\sqrt{5}}{1-\sqrt{3}+\sqrt{5}} = \frac{12\sqrt{5}-2\sqrt{15}+14\sqrt{3}-7}{11}$.
2. Solve the simultaneous equations $x^2+y^2=5$, $xy=2$
3. Solve the simultaneous equations $10x+3y-5z=1$, $2x-5y+10z=8$, $4x+y+15z=4$
4. Show that $\log_b x = \frac{\log_a x}{\log_a b}$, hence solve the equations
   (i) $\log_{32} x = -\frac{3}{5}$
   (ii) $\log_2 4x = 8\log_x 2$
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 3rd term of a G.P is 27 and the 5th 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 α 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 135^0 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 $AB = 6\sqrt{5}$.