## 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 $\begin{aligned} & x^{2}+y^{2}=5 \\ & x y=2\end{aligned}$

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

3. Solve the simultaneous equations $2 x-5 y+10 z=8$

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4 x+y+15 z=4
$$

4. Show that $\log _{b} x=\frac{\log _{a} x}{\log _{a} b}$, hence solve the equations
(1) $\quad \log _{32} x=-\frac{3}{5}$
(i) $\log _{2} 4 x=8 \log _{x} 2$
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 $3^{\text {nt }}$ term of a G.P is 27 and the $5^{\text {th }}$ term is 243 . Find the first term, common ratio and sum of the first 5 terms.
7. Solve the equation $\sqrt{2 y-5}=1+\sqrt{y-3}$.
8. Solve the equation $\sqrt{3 x}+\frac{1}{\sqrt{3 x}}=4$
9. The first term of a G.P is A and the sum of the first 3 terms is $\frac{7}{4} \mathrm{~A}$.
(i) Show that there are two possible progressions.
(ii) Given that $\mathrm{A}=4$, fin d the next two terms of each progression.
10. The second and chird 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 $x-3 y=0$ interests the curve $y=x-x^{3}$ at points $\mathrm{P}, \mathrm{O}$ and Q . Find the coordinates of $\mathrm{P}, \mathrm{O}$ and Q .
2. Find the equations of the lines through $(2,3)$ which make an angle of $135^{\circ}$ with the line $4 x-3 y+5=0$.
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 $A B=6 \sqrt{5}$.
