SARALA BIRLA PUBLIC SCHOOL

Mahilong, Ranchi.

Revision Test (Mathematics)

Class - XII

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1) Differentiate: $\sec(\tan\sqrt{x})$

2) Differenciate: $\sqrt{\frac{(x-3)(x^2+4)}{(3x^2+4x+5)}}$

3) If $x\sqrt{1+y}+y\sqrt{1+x}=0$ for $-1<x<1$, Prove that: $\frac{dy}{dx}=\frac{-1}{(1+x)^2}$

4) Show that $y=\frac{4\sin\theta}{2+\cos\theta}-\theta$ is an increasing function of θ in $[0,\frac{\pi}{2}]$.

5) Prove that curves $x=y^2$ and $xy=k$ cut at right angles if $8k^2=1$.

6) Show that the height of the cylinder of greatest volume which can be inscribed in a right circular cone of height h and semi vertical angle α is one-third that of the cone and the greatest volume of cylinder is $\frac{4}{27}\pi h^3\tan^2\alpha$.

7) Find the local maxima and local minima, if any. Also find the local maximum and local minimum values of $f(x)=\sin x-\cos x$, $0<x<2\pi$.