X-Mathematics Assignment No-05 - Thigonometry.
Q1 Express the other $t$-ratios of LA in terms of
(a) $\sin A$
(b) $\operatorname{Cos} A$
(c) $\tan A$
(d) $\cot A$
(e) $\sec A$
(f) $\operatorname{cosec} A$
22. Prove $\frac{\sin ^{2} 44^{\circ}+\sin ^{2} 46^{\circ}}{\cos ^{2} 47^{\circ}+\cos ^{2} 43^{\circ}}=1$

Q3. Prove $\frac{\sin (90-A) \sin A}{\tan A}=1-\sin ^{2} A$
Q4. Prone $\sin (90-\theta) \cos (90-\theta)=\frac{\tan \theta}{1+\tan ^{2} \theta}$
Q5. Prove $\sqrt{\frac{1+\sin A}{1-\sin A}}=\sec A+\tan A$
Q6 Prove $\sec A+\tan A=\frac{1}{\sec A-\tan A}$
Q7 Prove $\frac{1+\sin A}{\cos A}=\frac{\cos A}{1-\sin A}$


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Q8. Prove $\operatorname{cosec} A-\cot A=\frac{1}{\operatorname{cosec} A+\cot A}$
29 Prove $\frac{\cos A}{1+\sin A}+\frac{1+\sin A}{\cos A}=\frac{2}{\cos A}$
Q10 Prove $\sec ^{4} A-\tan ^{4} A=\sec ^{2} A+\tan ^{2} A$
Q11 If $\sin \theta+\cos \theta=1$, Prove

$$
\sin \theta \cos \theta=0
$$

Q12. $\frac{\sec A+\tan A-1}{1+\tan A-\sec A}=\frac{\cos A}{1-\sin A}$

$$
\text { or } \frac{1+\sin A}{\cos A}
$$

$$
\text { or } \sec A+\tan A
$$

Q13. $\frac{1+\sin A+\cos A}{1-\sin A+\cos A}=\sec A+\tan A$
214. $\frac{\cot A+\operatorname{cosec} A-1}{\cot A-\operatorname{cosec} A+1}=\operatorname{cosec} A+\cot A$
$\xrightarrow{\text { Cont-gg-3 }}$

Downloadeclofrionmmenaldoedtediestoday.com Prove the following identities
Q15. $\frac{\cos A-\sin A+1}{\cos A+\sin A-1}=\operatorname{cosec} A+\cot A$
Q16 $\frac{\sin A+\cos A}{\sin A-\cos A}+\frac{\sin A-\cos A}{\sin A+\cos A}=\frac{2 \sec ^{2} A}{\tan ^{2} A-1}$
Q17 $\frac{\tan A}{1+\cot A}+\frac{\cot A}{1+\tan A}=\sec A \operatorname{cosec} A-1$
Q18 $\left(\frac{1}{\cos \theta}-\cos \theta\right)\left(\frac{1}{\sin \theta}-\sin \theta\right)=\frac{1}{\tan \theta+\cot \theta}$
Q19 $\frac{\tan ^{2} \phi}{\tan ^{2} \phi-1}+\frac{\cos ^{2} \phi}{\sin ^{2} \phi-\cos ^{2} \phi}=\frac{1}{\sin ^{2} \phi-\cos ^{2} \phi}$
Q20. $(\sin \theta+\operatorname{cosec} \theta)^{2}+(\cos \theta+\sec \theta)^{2}=\tan ^{2} \theta+\cot ^{2} \theta+7$
Q21. $\frac{\sin ^{2} A}{\cos ^{2} A}+\frac{\cos ^{2} A}{\sin ^{2} A}=\frac{1}{\sin ^{2} A \cos ^{2} A}-2$
Q22. $(\sec A+\cos A)(\sec A-\cos A)=\tan ^{2} A+\sin ^{2} A$
Q23. $\sec A(1-\sin A)(\sec A+\tan A)=1$
$\xrightarrow{\text { Cont-lg-4 }}$
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Prove the following identities
24. $\frac{1+\tan ^{2} A}{1+\cot ^{2} A}=\left(\frac{1-\tan A}{1-\cot A}\right)^{2}=\tan ^{2} A$
25. $\frac{\sec \theta+\tan \theta}{\sec \theta-\tan \theta}=\left(\frac{1+\sin \theta}{\cos \theta}\right)^{2}$
23. $\frac{\tan \theta+\sin \theta}{\tan \theta-\sin \theta}=\frac{\sec \theta+1}{\sec \theta-1}$
27. $\frac{\sin \theta}{1-\cot \theta}+\frac{\cos \theta}{1-\tan \theta}=\sin \theta+\cos \theta$
28. If $\frac{\cos \alpha}{\cos \beta}=m ; \frac{\cos \alpha}{\sin \beta}=n$ show that

$$
\left(m^{2}+n^{2}\right) \cos ^{2} \beta=n^{2}
$$

29. If $x=a \cos \theta-b \sin \theta$

$$
y=a \sin \theta+b \cos \theta
$$

Prove $x^{2}+y^{2}=a^{2}+b^{2}$
30. If $x \sin ^{3} \theta+y \cos ^{3} \theta=\sin \theta \cos \theta$
and $x \sin \theta=y \cos \theta$
show $x^{2}+y^{2}=1$

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