## StudiesToday on

|  | TRIGONOMETRIC EQUATIONS |
| :---: | :---: |
|  | PRINCIPAL SOLUTIONS:- |
| Q.20) | Find the principal solutions of $\operatorname{cosec} x=-2$ |
| Sol.20) | $\begin{aligned} & \Rightarrow \sin x=\frac{-1}{2} \\ & 3^{\text {rd }} \text { quadrant, } \sin x=\sin \left(\pi+\frac{\pi}{6}\right) \\ & \Rightarrow \sin x=\sin \left(\frac{7 \pi}{6}\right) \\ & 4^{\text {th }} \text { quadrant, } \sin x=\sin \left(2 \pi+\frac{\pi}{6}\right) \\ & \Rightarrow \sin x=\sin \left(\frac{11 \pi}{6}\right) \\ & \Rightarrow x=\frac{7 \pi}{6} \text { and } x=\frac{11 \pi}{6} \text { are the principal solutions } \end{aligned}$ |
| Q.21) | Find the principal solutions of $\operatorname{cosec} x=-2$ |
| Sol.21) | $\operatorname{cosec} x$ $\Rightarrow \sin x=\frac{-1}{2}$ <br> $3^{\text {rd }}$ quadrant, $\sin x=\sin \left(\pi+\frac{\pi}{6}\right)$ <br> $\Rightarrow \sin x=\sin \left(\frac{7 \pi}{6}\right)$ <br> $4^{\text {th }}$ quadrant, $\sin x=\sin \left(2 \pi+\frac{\pi}{6}\right)$ <br> $\Rightarrow \sin x=\sin \left(\frac{11 \pi}{6}\right)$ <br> $\Rightarrow x=\frac{7 \pi}{6}$ and $x=\frac{11 \pi}{6}$ are the principal solutions |
| Q.22) | Find the principal solutions of $\tan x=\sqrt{3}$ |
| Sol.22) | $\tan x=\sqrt{3}$ <br> $1^{\text {st }}$ quadrant, $\tan x=\tan \left(\frac{\pi}{3}\right)$ $\Rightarrow x=\frac{\pi}{3}$ <br> $3^{\text {rd }}$ quadrant, $\tan x=\tan \left(\pi+\frac{\pi}{3}\right)$ $\Rightarrow \tan x=\tan \left(\frac{4 \pi}{3}\right)$ <br> $\therefore x=\frac{\pi}{3}$ and $x=\frac{4 \pi}{3}$ are the principal solutions |
| Q.23) | Find the principal solutions of, $\sec x=-1$ |
| Sol.23) | $\begin{aligned} & \sec x=-1 \\ & \Rightarrow \cos x=-1 \\ & 2^{\text {nd }} \text { quadrant, } \cos x=\cos (\pi-0) \\ & \Rightarrow x=\pi \\ & 3^{\text {rd }} \text { quadrant, } \cos x=\cos (\pi+0) \\ & \Rightarrow x=\pi \\ & \therefore x=\pi \text { is the principal solutions } \end{aligned}$ |

Copyright © www.studiestoday.com
All rights reserved. No part of this publication may be reproduced, distributed, or transmitted in any form or by any means, including photocopying, recording, or other electronic or mechanical methods, without the prior written permission.

