

ಈ ಅಭ್ಯಾಸದಲ್ಲಿ ಕೆಳಗಿನ ಸೂತ್ರಗಳನ್ನು/ಬೆಲೆಗಳನ್ನು ಪದೇ ಪದೇ ಉಪಯೋಗಿಸುವುದರಿಂದ ಅವುಗಳನ್ನು ನೆನಪಿನಲ್ಲಿಟ್ಟುಕೊಳ್ಳಿ.

$\sin\theta = \text{ಅಭಿಮುಖ ಬಾಹು} \div \text{ವಿಕರ್ಣ}$	$\sin 30^\circ = \cos 60^\circ = \frac{1}{2}$ $\sin 60^\circ = \cos 30^\circ = \frac{\sqrt{3}}{2}$
$\cos\theta = \text{ಪಾರ್ಶ್ವ ಬಾಹು} \div \text{ವಿಕರ್ಣ}$	$\tan 30^\circ = \frac{1}{\sqrt{3}}$, $\tan 60^\circ = \sqrt{3}$, $\tan 45^\circ = 1$
$\tan\theta = \text{ಅಭಿಮುಖ ಬಾಹು} \div \text{ಪಾರ್ಶ್ವ ಬಾಹು}$	

11.2.1. 1. ಈ ಕೆಳಗಿನವುಗಳನ್ನು ಕಂಡುಹಿಡಿಯಿರಿ.

ಬೆಲೆ ???	ಉತ್ತರ
i) $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$	$= \left\{ \frac{\sqrt{3}}{2} * \frac{\sqrt{3}}{2} \right\} + \left\{ \frac{1}{2} * \frac{1}{2} \right\} = \frac{1}{2} + \frac{1}{2} = \frac{3}{4} + \frac{1}{4} = 1$
ii) $2 \tan^2 45^\circ + \cos^2 30^\circ - \sin^2 60^\circ$	$= 2(1)^2 + \left(\frac{\sqrt{3}}{\sqrt{2}} \right)^2 - \left(\frac{\sqrt{3}}{\sqrt{2}} \right)^2 = 2 * 1 = 2$
iii) $\frac{\cos 45^\circ}{\sec 30^\circ + \operatorname{cosec} 30^\circ}$	$\cos 45^\circ = \frac{1}{\sqrt{2}} \text{-----(1)}$ $\sec 30^\circ + \operatorname{cosec} 30^\circ = \frac{2}{\sqrt{3}} + 2 = 2 \left(\frac{1}{\sqrt{3}} + 1 \right) = 2 \left(\frac{1 + \sqrt{3}}{\sqrt{3}} \right) = 2 \left(\frac{1 + \sqrt{3}}{\sqrt{3}} * \frac{1 - \sqrt{3}}{1 - \sqrt{3}} \right)$ $= 2 \left(\frac{1^2 - 3}{\sqrt{3}(1 - \sqrt{3})} \right) = \frac{-4}{\sqrt{3} - 3} = \frac{4}{3 - \sqrt{3}} = \frac{4}{3 - \sqrt{3}} * \frac{\sqrt{2}}{\sqrt{2}} = \frac{4\sqrt{2}}{3\sqrt{2} - \sqrt{6}} \text{-----(2)}$ $(1) \div (2) \text{ ರಿಂದ } \frac{\cos 45^\circ}{\sec 30^\circ + \operatorname{cosec} 30^\circ} = \frac{1}{\sqrt{2}} * \frac{3\sqrt{2} - \sqrt{6}}{4\sqrt{2}} = \frac{3\sqrt{2} - \sqrt{6}}{8}$
iv) $\frac{\sin 30^\circ + \tan 45^\circ - \operatorname{cosec} 45^\circ}{\sec 30^\circ + \cos 30^\circ + \cot 45^\circ} =$	$\sin 30^\circ + \tan 45^\circ - \operatorname{cosec} 45^\circ = \frac{1}{2} + 1 - \frac{2}{\sqrt{3}} = \frac{\sqrt{3} + 2\sqrt{3} - 4}{2\sqrt{3}} = \frac{3\sqrt{3} - 4}{2\sqrt{3}} \text{----(1)}$ $\sec 30^\circ + \cos 30^\circ + \cot 45^\circ = \frac{2}{\sqrt{3}} + \frac{1}{2} + 1 = \frac{4 + \sqrt{3} + 2\sqrt{3}}{2\sqrt{3}} = \frac{3\sqrt{3} + 4}{2\sqrt{3}} \text{----(2)}$ $(1) \div (2) \text{ ರಿಂದ } \frac{\sin 30^\circ + \tan 45^\circ - \operatorname{cosec} 45^\circ}{\sec 30^\circ + \cos 30^\circ + \cot 45^\circ} = \frac{3\sqrt{3} - 4}{2\sqrt{3}} * \frac{2\sqrt{3}}{3\sqrt{3} + 4} * \frac{3\sqrt{3} - 4}{3\sqrt{3} - 4}$ $= \frac{(3\sqrt{3})^2 + 4^2 - 2 * 3\sqrt{3} * 4}{(3 * \sqrt{3})^2 - 4^2} = \frac{27 + 16 - 24\sqrt{3}}{27 - 16} = \frac{43 - 24\sqrt{3}}{11}$

$v) \frac{5\cos^2 60^\circ + 4\sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$	$5\cos^2 60^\circ + 4\sec^2 30^\circ - \tan^2 45^\circ = 5\left(\frac{1}{2}\right)^2 + 4\left(\frac{2}{\sqrt{3}}\right)^2 - (1)^2 = \frac{5}{4} + \frac{16}{3} - 1$ $= \frac{15 + 64 - 12}{12} = \frac{67}{12} \text{ -----(1)}$ $\sin^2 30^\circ + \cos^2 30^\circ = 1 \text{ -----(2)}$ $(1) \div (2) \text{ ರಿಂದ } \frac{5\cos^2 60^\circ + 4\sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ} = \frac{67}{12}$
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11.2.2. ಸರಿಯಾದ ಉತ್ತರವನ್ನು ಆರಿಸಿ, ನಿಮ್ಮ ಆಯ್ಕೆಯನ್ನು ಸಮರ್ಥಿಸಿ.

ಬೆಲೆ ???	ಉತ್ತರ
$\frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ}$	$2 \tan 30^\circ = 2 * \frac{1}{\sqrt{3}} = \frac{2}{\sqrt{3}} \text{ -----(1)}$ $1 + \tan^2 30^\circ = 1 + \left(\frac{1}{\sqrt{3}}\right)^2 = 1 + \frac{1}{3} = \frac{4}{3} \text{ -----(2)}$ $(1) \div (2) \text{ ರಿಂದ } \frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ} = \frac{2}{\sqrt{3}} * \frac{3}{4} = \frac{\sqrt{3}}{2} = \sin 30^\circ$
$\frac{1 - \tan^2 45^\circ}{1 + \tan^2 45^\circ}$	$1 - \tan^2 45^\circ = 1 - 1^2 = 0$ & $1 + \tan^2 45^\circ = 1 + 1^2 = 2 \Rightarrow \frac{1 - \tan^2 45^\circ}{1 + \tan^2 45^\circ} = 0$
$\sin 2A = 2 \sin A$ ಆದರೆ $A = ??$	$\sin 2A = \sin(A+A) \Rightarrow 2A = A \Rightarrow A = 0$
$\frac{2 \tan 30^\circ}{1 - \tan^2 30^\circ}$	$2 \tan 30^\circ = 2 * \frac{1}{\sqrt{3}} = \frac{2}{\sqrt{3}}$ & $1 - \tan^2 30^\circ = 1 - \left(\frac{1}{\sqrt{3}}\right)^2 = 1 - \frac{1}{3} = \frac{2}{3}$ $(1) \div (2) \text{ ರಿಂದ } \frac{2 \tan 30^\circ}{1 - \tan^2 30^\circ} = \frac{2}{\sqrt{3}} * \frac{3}{2} = \sqrt{3} = \tan 60^\circ$

11.2.3. . $\tan(A + B) = \sqrt{3}$ ಮತ್ತು $\tan(A - B) = \frac{1}{\sqrt{3}}$ ಆಗಿದೆ. ಇಲ್ಲಿ $0^\circ < A + B \leq 90^\circ$; $A > B$ ಆದರೆ, A ಮತ್ತು B ಕಂಡುಹಿಡಿಯಿರಿ.

$$\tan(A+B) = \sqrt{3} \text{ \& } \tan 60^\circ = \sqrt{3} \Rightarrow A+B=60^\circ \text{ -----(1)}$$

$$\tan(A-B) = \frac{1}{\sqrt{3}} \text{ \& } \tan 30^\circ = \frac{1}{\sqrt{3}} \Rightarrow A-B=30^\circ \text{ -----(2)}$$

$$(1)+(2) \Rightarrow 2A=90^\circ \therefore \angle A=45^\circ \text{ ಈ ಬೆಲೆಯನ್ನು ಮೇಲಿನ ಯಾವುದಾದರೂ ಸಮೀಕರಣದಲ್ಲಿ ಆದೇಶಿಸಿದಾಗ } \angle B=15^\circ$$

11.2.4. ಈ ಕೆಳಗಿನ ಹೇಳಿಕೆಗಳು ಸರಿ ಅಥವಾ ತಪ್ಪು ತಿಳಿಸಿ ನಿಮ್ಮ ಉತ್ತರವನ್ನು ಸಮರ್ಥಿಸಿ,

ಹೇಳಿಕೆ ಸರಿಯೇ ತಪ್ಪೇ?	ಉತ್ತರ	ಸಮರ್ಥನೆ
$\sin(A+B) = \sin A + \sin B$	ತಪ್ಪು	$A=30^\circ$ & $B=60^\circ$ ಆಗಿರಲಿ. ಆಗ $\sin(A+B) = \sin(90^\circ) = 1$ $\sin A = \sin(30^\circ) = \frac{1}{2}$ & $\sin B = \sin(60^\circ) = \frac{\sqrt{3}}{2}$ $\sin(A) + \sin(B) = \sin(30^\circ) + \sin(60^\circ) = \frac{1}{2} + \frac{\sqrt{3}}{2}$ $1 \neq \frac{1}{2} + \frac{\sqrt{3}}{2} \therefore \sin(A+B) \neq \sin(A) + \sin(B)$
ಠಹೆಚ್ಚಾದಂತೆ $\sin\theta$ ಬೆಲೆಯು ಹೆಚ್ಚುತ್ತದೆ	ಸರಿ	$\sin(0^\circ) = 0$; $\sin(30^\circ) = \frac{1}{2}$; $\sin(45^\circ) = \frac{1}{\sqrt{2}}$; $\sin(60^\circ) = \frac{\sqrt{3}}{2}$ & $\sin(90^\circ) = 1$
ಠಹೆಚ್ಚಾದಂತೆ $\cos\theta$ ಬೆಲೆಯು ಹೆಚ್ಚುತ್ತದೆ	ತಪ್ಪು	$\cos(0^\circ) = 1$; $\cos(30^\circ) = \frac{\sqrt{3}}{2}$; $\cos(45^\circ) = \frac{1}{\sqrt{2}}$; $\cos(60^\circ) = \frac{1}{2}$ & $\cos(90^\circ) = 0$
ಠದ ಎಲ್ಲಾ ಬೆಲೆಗಳಿಗೆ $\sin\theta = \cos\theta$ ಆಗಿದೆ	ತಪ್ಪು	$\sin(30^\circ) = \frac{1}{2}$; $\cos(30^\circ) = \frac{\sqrt{3}}{2}$
$A=0^\circ$ ಗೆ $\cot A$ ನಿರ್ದಿಷ್ಟವಾಗಿ ವ್ಯಕ್ತಪಡಿಸಿಲ್ಲ	ಸರಿ	$\cos(0^\circ) = 1$ & $\sin(0^\circ) = 0 \therefore \cot(0^\circ) = \frac{\cos(0^\circ)}{\sin(0^\circ)} = \frac{1}{0}$