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6.1 Secant, Cosecant and Cotangent

1a] $\sec 30° = \frac{1}{\cos 30°} = \frac{2\sqrt{3}}{3}$

b] $\operatorname{cosec} \frac{5\pi}{4} = \frac{1}{\sin \frac{5\pi}{4}}$

$= -\sqrt{2}$

c] $\cot \frac{7\pi}{6} = \frac{1}{\tan \frac{7\pi}{6}}$

$= \sqrt{3}$

2] a] $\cot 3.6 \text{ rad}$

$= \frac{1}{\tan 3.6 \text{ rad}}$

$= 2.03$

b] $\operatorname{cosec} 153° = \frac{1}{\sin 153°}$

$= 2.20°$

c] $\sec \frac{7\pi}{4} = \frac{1}{\cos \frac{7\pi}{4}}$

$= 1.41$

3a] $\sec 150 = \frac{1}{\cos 150} = \frac{-2\sqrt{3}}{3}$

b] $\cot (-135) = \frac{1}{\tan (-135)}$

$= 1$

c] $\operatorname{cosec} \frac{3\pi}{2} = \frac{1}{\sin \frac{3\pi}{2}}$

$= -1$

4a] $\frac{\sec 60}{\operatorname{cosec} 270}$

$= \frac{\frac{1}{\cos 60}}{\frac{1}{\sin 270}}$

$= \frac{2}{-1} = -2$

b] $\operatorname{cosec} \frac{3\pi}{6} \times \cot \frac{\pi}{6}$

$= \frac{1}{\sin \frac{3\pi}{6}} \times \frac{1}{\tan \frac{\pi}{6}}$

$= \sqrt{2} \times \sqrt{3} = \sqrt{6}$

5a] Using LHS

$= \sec (-\theta)$

$= \frac{1}{\cos (-\theta)}$

$= \frac{1}{\cos (\theta)}$

$= \sec \theta$

∴ LHS = RHS

b] Using LHS

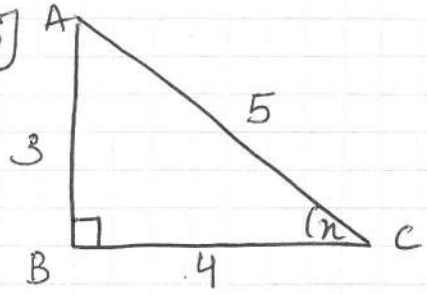
$\cot (\theta + \pi)$

$= \frac{1}{\tan (\theta + \pi)}$

$= \frac{1}{\tan \theta}$

$= \cot \theta$

6.1 Secant, Cosecant and Cotangent

6] 

Using pyth theorem

$AB = \sqrt{AC^2 - BC^2}$

$AB = 3$ cm

a] $\sec n = \frac{1}{\cos n} = \frac{1}{\frac{4}{5}}$

$\therefore \sec n = \frac{5}{4}$

b] $\operatorname{cosec} n = \frac{1}{\sin n}$

$= \frac{1}{\frac{3}{5}}$

$\operatorname{cosec} n = \frac{5}{3}$

c] $\cot n = \frac{1}{\tan n}$

$= \frac{1}{\frac{3}{4}}$

$\cot n = \frac{4}{3}$

7] $\cot \frac{\pi}{3} - \operatorname{cosec} \frac{\pi}{4}$

$= \frac{1}{\tan \frac{\pi}{3}} - \frac{1}{\sin \frac{\pi}{4}}$

$= \frac{\sqrt{3}}{3} - \sqrt{2}$

$= \frac{\sqrt{3} - 3\sqrt{2}}{3}$

So $a = 3$, $b = 2$.