Pre-Calculus
REVIEW Section 5.1 – 5.2

Name: Key

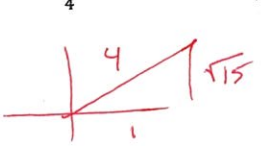
For 1- 3, find each value.

1. If $\csc A = 2$, find the value of $\sin A$.

$\sin A = \frac{1}{2}$

Q1

2. If $\cos\theta = \frac{1}{4}$ and $0° < \theta < 90°$, find $\tan\theta$.

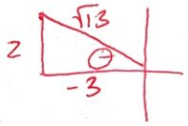


$\tan\theta = \sqrt{15}$

3. If $\cot x = -\frac{3}{2}$ and $\sec x < 0$, find $\sin x$ and $\cos x$.

$\tan \to -\ \ \cos \to -$ > Q2

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



$\sin x = \frac{2}{\sqrt{13}}$ $\quad \frac{2\sqrt{13}}{13}$

$\cos x = \frac{-3}{\sqrt{13}}$ $\quad \frac{-3\sqrt{13}}{13}$

For 4 - 8, simplify each expression.

4. $\sin x \sec x$

$\sin x \left(\frac{1}{\cos x}\right) = \tan x$

5. $\cot x \sec x \sin x$

$\left(\frac{\cos x}{\sin x}\right)\left(\frac{1}{\cos x}\right)(\sin x)$ $\quad 1$

6. $\cos x + \sin x \tan x$

$\cos x + \sin x\left(\frac{\sin x}{\cos x}\right)$

$\left(\frac{\cos x}{\cos x}\right)\cos x + \frac{\sin^2 x}{\cos x}$ $\rightarrow$ $\frac{\cos^2 x + \sin^2 x}{\cos x}$

$\frac{1}{\cos x}$

$\sec x$

7. $\frac{\cot A}{\tan A}$?

$\cot^2$

8. $\sin^2\theta\cos^2\theta - \cos^2\theta$

$\cos^2\theta(\sin^2 - 1)$

$\cos^2\theta(-\cos^2\theta)$

$-\cos^4\theta$

9. $\frac{\sin x \csc x}{\tan x}$? $\cot x$

$\sin x\left(\frac{1}{\sin x}\right)\left(\frac{\cos x}{\sin x}\right)$

$\cot x$

10. $\tan x \cot x - \cos^2 x$

$1 - \cos^2 x$

$\sin^2 x$

$\left(\frac{1+\sin x}{1+\sin x}\right)$ 11. $\frac{\sin x}{\cos x} + \frac{\cos x}{1+\sin x}\left(\frac{\cos x}{\cos x}\right)$

$\frac{\sin x + (\sin^2 x + \cos^2 x)}{\cos x(1+\sin x)}$

$\frac{\sin x + 1}{\cos(1+\sin x)}$

$\frac{1}{\cos x}$ $\quad \sec x$

For 12 - 16, verify each identity.

12. $\frac{\sin\theta}{1+\cos\theta} + \frac{1+\cos\theta}{\sin\theta} = 2\csc\theta$

$\frac{\sin^2\theta + 1 + 2\cos\theta + \cos^2\theta}{\sin\theta(1+\cos\theta)}$

$\frac{1 + 1 + 2\cos\theta}{\sin\theta(1+\cos\theta)}$

$\frac{2(1+\cos\theta)}{\sin(1+\cos\theta)}$

$2\csc\theta = 2\csc\theta$ ✓

13. $\frac{\csc\theta\tan\theta}{1+\tan^2\theta} = \cos\theta.$

$\frac{\frac{1}{\sin\theta}\cdot\frac{\sin\theta}{\cos\theta}}{\sec^2\theta} =$

$\frac{\cos\theta\sec\theta}{\sec^2\theta}$

$\frac{1}{\sec\theta}$

$\cos\theta = \cos\theta$ ✓

14. $\frac{1}{\sec x - \tan x} = \sec x + \tan x$

$\frac{\sec x + \tan x}{\sec^2 x - \tan^2 x} =$

$\frac{\sec x + \tan x}{\sec x(\sec x - 1)}$

$\frac{\sec x + \tan x}{1} = \sec x + \tan x$ ✓

15. $2\tan x\sec x = \frac{1}{1-\sin x} - \frac{1}{1+\sin x}$

$= \frac{1+\sin x - 1 + \sin x}{1-\sin^2 x}$

$= \frac{2\sin x}{\cos^2 x}$

$= 2\cdot\frac{\sin x}{\cos x}\cdot\frac{1}{\cos x}$

$2\tan x\sec x = 2\tan x\sec x$ ✓

16. $\frac{\cos x}{1-\sin x} = \sec x + \tan x$

$\frac{\cos x + \sin x\cos x}{1-\sin^2 x}$

$\frac{\cos x + \sin x\cos x}{\cos^2 x}$

$\frac{\cos x}{\cos^2 x} + \frac{\sin x\cos x}{\cos^2 x}$

$\frac{1}{\cos x} + \frac{\sin x}{\cos x}$

$\sec x + \tan x = \sec x + \tan x$ ✓