

p. 451 #5, 7, 11, 15, 17, 19, 21, 22, 23, 24, 34, 36

5. $\sin \theta = .45$ $\cos(\pi/2 - \theta) = ?$

$$\boxed{\cos(\pi/2 - \theta) = \sin \theta = .45}$$

7. $\sin(\theta - \pi/2) = .73$ $\cos(-\theta) = ?$

$$\sin(-(\pi/2 - \theta)) = -\sin(\pi/2 - \theta) = -\cos \theta = .73 \Rightarrow \cos \theta = -.73$$

and

$$\cos(-\theta) = \cos(\theta)$$

So

$$\boxed{\cos(-\theta) = -.73}$$

11. $\sec y \sin(\pi/2 - y) = \sec y \cdot \cos y = \frac{1}{\cos y} \cdot \cos y = \boxed{1}$

15. $\cos x - \cos^3 x = \cos x (1 - \cos^2 x) = \boxed{\cos x \cdot \sin^2 x}$

$$\frac{s^2 + c^2}{-c^2} = 1 \Rightarrow \frac{\sin^2 x}{-c^2} = 1 - \cos^2 x$$

17. $\sin x \cdot \csc(-x) = \sin x \cdot \frac{1}{\sin(-x)} = \sin x \cdot \frac{1}{-\sin x} = \boxed{-1}$

19. $\cot(-x) \cot(\pi/2 - x) = \cot(-x) \cdot \tan x = -\cot x \cdot \tan x$

$$= \frac{-1}{\tan x} \cdot \tan x = \boxed{-1}$$

21. $\sin^2(-x) + \cos^2(-x) = 1$

22. $\sec^2(-x) - \tan^2 x = \sec^2 x - \tan^2 x = \boxed{1}$

$$\frac{c^2 + s^2}{c^2} = 1 \quad 1 + \tan^2 x = \sec^2 x \quad 1 = \sec^2 x - \tan^2 x$$

23. $\frac{\tan(\pi/2 - x) \csc x}{\csc^2 x} = \frac{\cot x}{\csc x} = \frac{\cos x}{\frac{1}{\sin x}} = \frac{\cos x}{\sin x} \cdot \frac{\sin x}{1} = \boxed{\cos x}$

$$24. \frac{1 + \tan x}{1 + \cot x} = \frac{1 + \frac{\sin x}{\cos x}}{1 + \frac{\cos x}{\sin x}} = \frac{\frac{\cos x + \sin x}{\cos x}}{\frac{\sin x + \cos x}{\sin x}} = \frac{\cos x + \sin x}{\cos x} \cdot \frac{\sin x}{\cos x + \sin x}$$

$$= \frac{\sin x}{\cos x} = \boxed{\tan x}$$

$$34. \frac{1}{1 - \sin x} + \frac{1}{1 + \sin x} = \frac{1 + \sin x + 1 - \sin x}{(1 - \sin x)(1 + \sin x)} = \frac{2}{1 - \sin^2 x} = \frac{2}{\cos^2 x} = \boxed{2 \sec^2 x}$$

$$36. \frac{1}{\sec x - 1} - \frac{1}{\sec x + 1} = \frac{\sec x + 1 - (\sec x - 1)}{(\sec x - 1)(\sec x + 1)} = \frac{\sec x + 1 - \sec x + 1}{\sec^2 x - 1}$$

$$\frac{c^2 + s^2}{c^2} = \frac{1}{c^2} \Rightarrow 1 + \tan^2 = \sec^2 \Rightarrow \sec^2 - 1 = \tan^2$$

$$= \frac{2}{\tan^2 x} = \boxed{2 \cot^2 x}$$