

7.2.3 Practice

- 1.) False 2.) True 3.) False 4.) $\sin 65^\circ$ 5.) $\tan 66^\circ$ 6.) $\cos(\frac{\pi}{12})$

7.) $\tan(195^\circ) = \tan(225^\circ - 30^\circ)$

8.) $\cos 255^\circ = \cos(210^\circ + 45^\circ)$

9.) $\sin 165^\circ = \sin(135^\circ + 30^\circ)$

$$\frac{1 + \tan 225^\circ \tan 30^\circ}{1 - \frac{1}{\sqrt{3}} - \frac{1 - \frac{1}{\sqrt{3}}}{1 + \frac{1}{\sqrt{3}}}}$$

$$\frac{(\frac{\sqrt{3}}{2})(\frac{\sqrt{2}}{2}) - (-\frac{1}{2})(\frac{\sqrt{3}}{2})}{-\frac{\sqrt{6}}{4} + \frac{-\sqrt{2}}{4} - \frac{-\sqrt{6} + \sqrt{2}}{4}}$$

$$\frac{(\frac{\sqrt{2}}{2})(\frac{\sqrt{3}}{2}) + (-\frac{\sqrt{2}}{2})(\frac{1}{2})}{\frac{\sqrt{6}}{4} - \frac{\sqrt{2}}{4} - \frac{\sqrt{6} - \sqrt{2}}{4}}$$

12.) $\tan \frac{\pi}{12} = \tan(\frac{\pi}{4} - \frac{\pi}{6})$

13.) $\frac{5}{12}$

14.) $-\frac{3}{5}$

15.

$$\frac{1 + \tan \frac{\pi}{4} \tan \frac{\pi}{6}}{\frac{1 - \frac{1}{\sqrt{3}}}{1 + \frac{1}{\sqrt{3}}}}$$

$$\sin(\alpha - \beta) = \sin \alpha \cos \beta - \cos \alpha \sin \beta$$

$$\cos x \cos y - \sin x \sin y$$

$$\frac{1 - \frac{1}{\sqrt{3}}}{1 + \frac{1}{\sqrt{3}}}$$

$$= \frac{(\frac{4}{5})(\frac{5}{13}) - (\frac{3}{5})(\frac{12}{13})}{\frac{20}{65} - \frac{36}{65} = -\frac{16}{65}}$$

$$-\frac{15}{85} - \frac{32}{85} = -\frac{47}{85}$$

17.) $\cos(x - \pi) = \cos x$

18.) $\sin(x - \pi) = \sin x$

$$\cos x \cos \pi + \sin x \sin \pi = \cos x$$

$$\sin x \cos \pi - \sin \pi \cos x = \sin x$$

$$-\cos x \neq \cos x$$

$$-\sin x \neq \sin x$$