

BE - Alg. 2 WEDNESDAY 2-16-11

Simplify:

① $\frac{\sqrt{6}}{4} + \frac{\sqrt{2}}{2}$

② $\frac{1}{2} - \frac{\sqrt{3}}{4}$

③ $\frac{3}{5-i}$

ANS

① $\frac{\sqrt{6}}{4} + \frac{\sqrt{2}}{2} = \frac{\sqrt{6}}{4} + \frac{2\sqrt{2}}{4} = \frac{\sqrt{6} + 2\sqrt{2}}{4}$

② $\frac{1}{2} - \frac{\sqrt{3}}{4} = \frac{2}{4} - \frac{\sqrt{3}}{4} = \frac{2 - \sqrt{3}}{4}$

③ $\frac{3}{5-i} \cdot \frac{5+i}{5+i} = \frac{15+3i}{25-i^2} = \frac{15+3i}{26}$

$i = \sqrt{-1} = i$
$i^2 = -1$
$i^3 = -i$
$i^4 = 1$

• Group Practice \Rightarrow Pg. 784 # 16-22 even.

Homework Review - Pg. 784 #5-B

$$\begin{aligned} \textcircled{5} \quad \tan^2 \theta \cos^2 \theta &= 1 - \cos^2 \theta \\ \frac{\sin^2 \theta}{\cos^2 \theta} \cdot \cos^2 \theta & \\ \sin^2 \theta &= \sin^2 \theta \quad \checkmark \end{aligned}$$

$$\begin{aligned} \textcircled{6} \quad \frac{\cos^2 \theta}{1 - \sin \theta} &= 1 + \sin \theta \\ \frac{\cos^2 \theta (1 + \sin \theta)}{(1 - \sin \theta)(1 + \sin \theta)} & \\ = \frac{\cos^2 \theta (1 + \sin \theta)}{1^2 - \sin^2 \theta} & \\ = \frac{\cancel{\cos^2 \theta} (1 + \sin \theta)}{\cancel{\cos^2 \theta}} &= 1 + \sin \theta \quad \checkmark \end{aligned}$$

$$\textcircled{7} \quad \frac{1 + \tan^2 \theta}{\csc^2 \theta} = \tan^2 \theta$$

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

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

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

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

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

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

$$\tan^2 \theta = \tan^2 \theta \quad \checkmark$$

$$\textcircled{8} \quad \frac{\sin \theta}{\sec \theta}$$

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

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

$$\frac{\tan^2 \theta}{\tan \theta} + \frac{1}{\tan \theta}$$

$$\frac{1}{\tan^2 \theta + 1}$$

$$\frac{\tan \theta}{\tan^2 \theta + 1}$$

$$\frac{\tan \theta}{\tan^2 \theta + 1}$$

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

$$\tan^2 \theta + 1 = \sec^2 \theta$$

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

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

$$= \sin \theta \cos \theta$$

$$= \boxed{\sin \theta \frac{1}{\sec \theta}} \quad \checkmark$$