BE – Alg. 2 WEDNESDAY 2-15-12

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. $\frac{\sqrt{6}}{4} + \frac{\sqrt{2}}{2} = \frac{\sqrt{6}}{4} + \frac{2\sqrt{2}}{4} = \boxed{\frac{\sqrt{6}+2\sqrt{2}}{4}}$

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

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

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

- Group Practice => Pg. 784 # 16-22 even.

Homework Review – Pg. 784 #5-8

⑤ $\tan^2\theta \cos^2\theta = 1 - \cos^2\theta$

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

$\sin^2\theta = \sin^2\theta$ ✓

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⑥ $\frac{\cos^2\theta}{1-\sin\theta} = 1 + \sin\theta$

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

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

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

⑦ $\dfrac{1+\tan^2\theta}{\csc^2\theta} = \tan^2\theta$

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

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

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

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

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

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

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

(8) $\dfrac{\sin\theta}{\sec\theta} = \dfrac{1}{\tan\theta + \cot\theta}$

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

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

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

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

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

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

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

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

$= \sin\theta\cos\theta$

$= \boxed{\sin\theta \frac{1}{\sec\theta}}$ ✓