

**MATH 1151 QUIZ-6** (15 minutes)

**1.(4 points)** Prove  $\sin(\theta + \frac{\pi}{2}) = \cos \theta$  by using addition-subtraction identities.

**Solution:**  $\sin(\theta + \frac{\pi}{2}) = \cos \theta = \sin \theta \cos \frac{\pi}{2} + \sin \frac{\pi}{2} \cos \theta = \sin \theta * 0 + 1 * \cos \theta = \cos \theta$   
**Q.E.D.**

**2.(3 points)** Write  $\sin 4y - \sin 3y$  as a product by using sum-to-product identities.

**Solution:** By the formula  $\sin 4y - \sin 3y = 2 \cos \frac{4y+3y}{2} \sin \frac{4y-3y}{2} = 2 \cos \frac{7y}{2} \sin \frac{y}{2}$ . **Q.E.D.**

**3.(3 points)** Find the value of  $\sin^{-1} 2$ .

**Solution:** If  $\sin^{-1} 2 = \theta$  then  $\sin \theta = 2$  which has no solution since range of sin function is  $[-1, 1]$ . **Q.E.D.**