

## QUIZ 7 - MTH 166 - 10 points

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Instructions:** Solve the following. Remember to show all work in order to receive full credit.

1. a) Factor and simplify  $\sec^2 x \tan^2 x + \sec^2 x$ .  
b) Perform the multiplication and simplify  $(3 - 3 \sin x)(3 + 3 \sin x)$ .
  
2. Verify the identities.  
a)  $\tan x \cot x = 1$   
b)  $\sin^3 x + \sin x \cos^2 x = \sin x$
  
3. Solve the following equations:  $(0 \leq x \leq 360^\circ)$   
a)  $\sin x + \sqrt{3} = -\sin x$   
b)  $3 \tan^2 x - 3 = 0$   
c)  $\sin^2 x - \sin x - 2 = 0$
  
4. Use sum and difference identities to write the following expressions as sine, cosine, or tangent of an angle.  
[ Formulas on page 508]  
a)  $\sin 140^\circ \cos 50^\circ + \cos 140^\circ \sin 50^\circ$   
b)  $\frac{\tan 140^\circ - \tan 60^\circ}{1 + \tan 140^\circ \tan 60^\circ}$
  
5. Find the exact value of  $\cos(\frac{w}{2})$ ,  $\sin(\frac{w}{2})$ ,  $\tan(\frac{w}{2})$  using the half angle formulas. [Formulas on page 518]  
 $\sin w = \frac{12}{13}$ ,  $\frac{\pi}{2} < w < \pi$
  
6. Find the exact values of  $\sin 2w$ ,  $\cos 2w$ ,  $\tan 2w$  using the double angle formulas. [Formulas on page 515]  
 $\cos w = -\frac{2}{3}$ ,  $\frac{\pi}{2} < w < \pi$ 
  - REMEMBER after QUIZ # 8 there will be an exam in the TESTING CENTER
  - EXAM #4 will include concepts from Quizzes #7 and #8