

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

Period: \_\_\_\_\_

Row: \_\_\_ Seat: \_\_\_

**MPS22 EXAM 4 PRACTICE TEST**

**SHOW ALL WORK.** Give exact answers unless indicated otherwise. Place a box around your final answers.  
Point values are given in brackets.

1. Prove the identity: [ 10 ]  
 $\cot \theta + \tan \theta = \csc \theta \cdot \sec \theta$

2. Use the half-angle identity  $\cos \frac{1}{2} A = \pm \sqrt{\frac{1 + \cos A}{2}}$  [ 10 ]  
to find the *exact* value of  $\cos 15^\circ$ .

3. If  $\sec A = -\frac{13}{5}$ ,  $\tan B = 2$ , and angles [ 12 ]  
 $A$  and  $B$  both terminate in Quadrant III,  
find the exact value of  $\cos(A + B)$ .  
[Use the identity  $\cos(A + B) = \cos A \cos B - \sin A \sin B$ .]

4. If  $\sin \theta = -\frac{1}{3}$  and  $\frac{3\pi}{2} < \theta < 2\pi$ , [ 12 ]  
find the exact value of  $\sin 2\theta$ .

5. Solve for all values of  $x$  in the interval  $0 \leq x < 2\pi$ :  $2 \cos x - \sqrt{3} = 4 \cos x$  [ 12 ]

6. Solve for all values of  $x$  in the interval  $0 \leq x < 2\pi$ :  $\cos x \tan x - \cos x = 0$  [ 12 ]

---

7. Solve for all values of  $x$  on the interval  $0 \leq x < 2\pi$ :  $\cos 2x + 3 \sin x = -1$  [ 16 ]

---

8. Solve for all values of  $x$  in the interval  $0 \leq x < 2\pi$ :  $3 \cos x + 3 = 2 \sin^2 x$  [ 16 ]