High School for Health Professions and Human Services
Robert Gentile, Principal
01 May 2017

Mathematics Department
Anastasia Tavarez, A. P. Mathematics
Mr. Shahom, Math Teacher

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 $\cos 15°$.

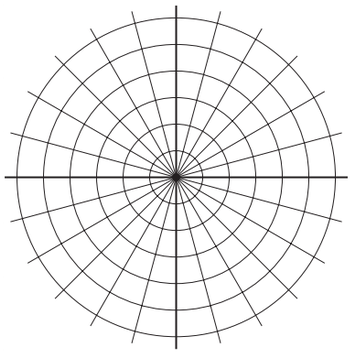
3. If $\sec A = -\frac{13}{5}$, $\tan B = 2$, and angles [12]
A and B both terminate in Quadrant III,
find the exact value of $\cos(A+B)$.

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 on the interval $0 \le x < 2\pi$: $\cos 2x + 3\sin x = -1$ [10]

6. Solve for all values of x on the interval $0 \le x < 2\pi$: $3\cot x - \tan x = 0$ [10]

7. (a) Plot the point $\left(4, \frac{5\pi}{6}\right)$ on the polar plane below.



(b) State *two* other sets of polar coordinates that represent the point $\left(4, \frac{5\pi}{6}\right)$ where $r < 0$. [6]

8. Find the exact rectangular coordinates of the point $\left(-8, \frac{5\pi}{3}\right)$. [6]

9. Find the exact polar coordinates of the point $\left(-3, 3\right)$. [8]

10. Convert the equation to rectangular form: $r = \dfrac{3}{\cos\theta - 4\sin\theta}$ [8]

11. Convert the equation to polar form: $y = -3x + 2$ [8]