Honors Trigonometry
Copy original problem.
Convince *me* that **you** understand the concept!
No Calculators!

Name _____

Per _____ Date _____

Chapter 7 Exam

I Given z_1 and z_2 find: $z_1 + z_2$, $z_1 \cdot z_2$, and $\frac{z_1}{z_2}$. (3 pts ea part; total 36 pts)

Write your answers in cartesian coordinate form [ie. (a,b)] where a and b are real numbers.

a) $z_1 = 2 + 3i$, $z_2 = 3 - 4i$

b) $z_1 = -5 + \sqrt{-16}$, $z_2 = 4 - \sqrt{-36}$

c) $z_1 = (4, 5)$, $z_2 = (-3, 2)$

d) $z_1 = 2 \text{ cis } 120^\circ$, $z_2 = -3 \text{ cis } 30^\circ$

II Given z_1 and z_2 find: $z_1 \cdot z_2$, and $\frac{z_1}{z_2}$ (tot 24 pts)

Write your final answer in the form of: $\rho \text{ cis } \theta$; $(0 \le \theta < 360 \; ; \; \rho \ge 0)$

a) $z_1 = 2 - 2i$, $z_2 = -1 + i$

b) $z_1 = (0, -2)$, $z_2 = (4, -4)$

c) $z_1 = 4 - 4i$, $z_2 = 4\sqrt{2} \text{ cis } 135^\circ$

d) $z_1 = 3 \text{ cis } 30^\circ$, $z_2 = 6 \text{ cis } 45^\circ$

III Express: $\left(\frac{3\sqrt{3}}{2} - \frac{3}{2}i\right)^{-4}$ in the form of $a + bi$ (10 pts)

IV Convert: (5 pts ea)

a) $(x + 3)^2 + (y - 1)^2 = 10$ to polar form

b) $\rho = \frac{6}{2\cos\theta - 3\sin\theta}$ to cartesian form

V Sketch the following equations on the axes provided on the opposite side of this paper. (5 pts ea)

a) $\rho = 3 \sin \theta$

b) $\rho = -2$

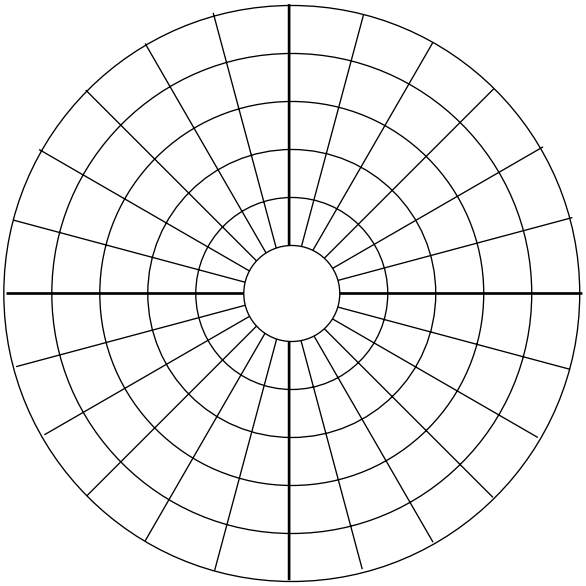
c) $\theta = \frac{11}{12}\pi$

d) $\rho = \frac{\theta}{180}$

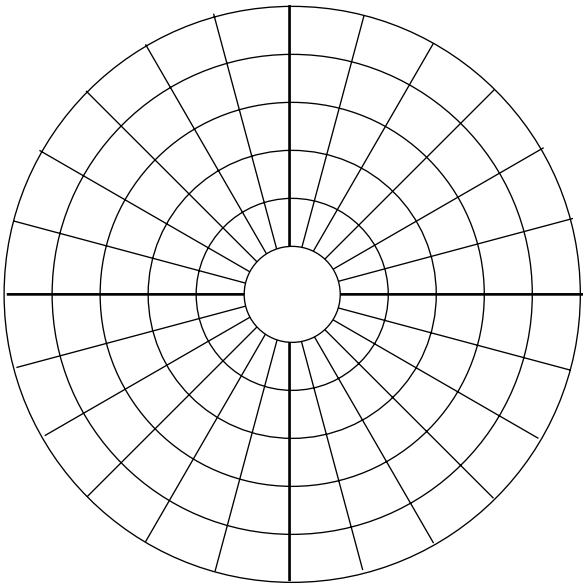
Extra Credit **5 pts**

Given: $\sin x = 3 \cos x$ and $\sin x \cos x = k$. Solve for k.
(hint: k is a positive number less than 2.)

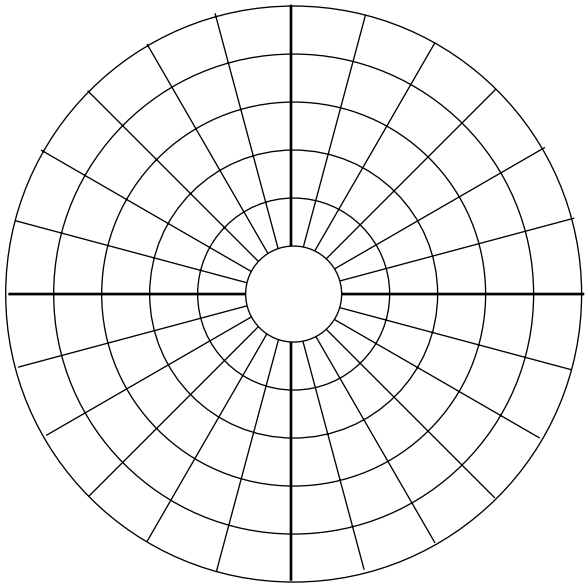
V A)



V B)



V C)



V D)