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

Name _____

Per _____ Date _____

Chapter 7 Exam

I Given z_1 and z_2 find: $z_1 + z_2$, $z_1 \cdot z_2$, and $\frac{z_1}{z_2}$.

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

(tot 30 pts)

A) $z_1 = -3 + 2i$, $z_2 = 4 - 5i$

B) $z_1 = 4 + \sqrt{-18}$, $z_2 = 5 - \sqrt{-8}$

C) $z_1 = (6, -2)$, $z_2 = (-3, 4)$

D) $z_1 = 2\,\text{cis}\,210°$, $z_2 = 3\,\text{cis}\,300°$

II Given z_1 and z_2 find: $z_1 \cdot z_2$, and $\frac{z_1}{z_2}$. (tot 20 pts)

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

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

B) $z_1 = 4 - 4i$, $z_2 = -2i$

C) $z_1 = 5\ \text{cis}\ 150°$, $z_2 = 5(1 - i)$

D) $z_1 = 4\,\text{cis}\,30°$, $z_2 = 8\,\text{cis}\,60°$

III Express: $\left(\frac{3\sqrt{3}}{2} - \frac{3i}{2}\right)^{-5}$ in the form of a + b*i* (5 pts)

IV Find the four fourth roots of i. Write your answers in $\rho\,\text{cis}\,\theta$; $(0 \le \theta < 360\ ;\ \rho \ge 0)$ (5 pts)

V Fill in the table with at least 5 values each and sketch in the areas provided on the back side of this paper. Rewrite each equation in cartesian form. (10 pts ea)

A) $\rho = 4 - 4\sin\theta$

B) $\rho = 4\cos\theta$

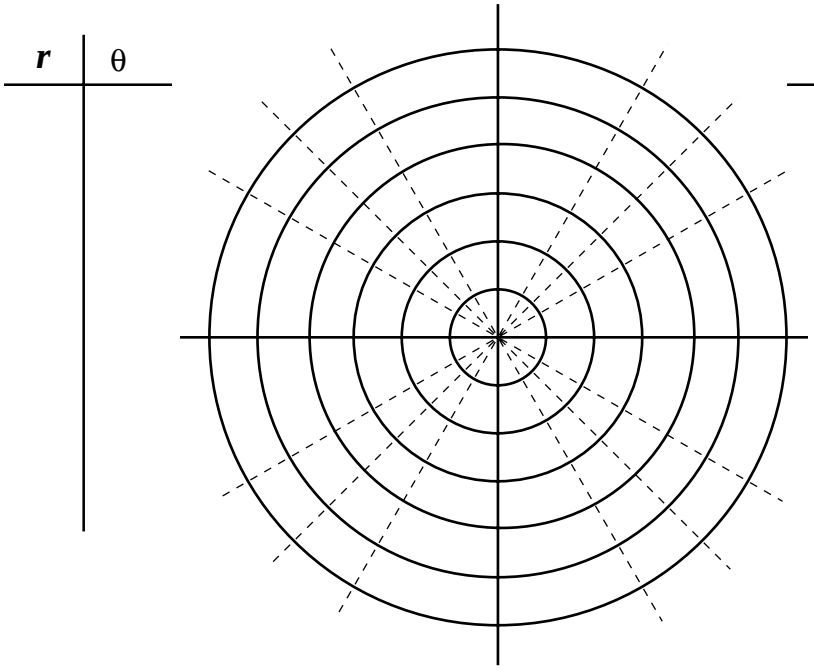
C) $\rho = \frac{-2}{\cos\theta}$

D) $\rho = 2\sin 2\theta$

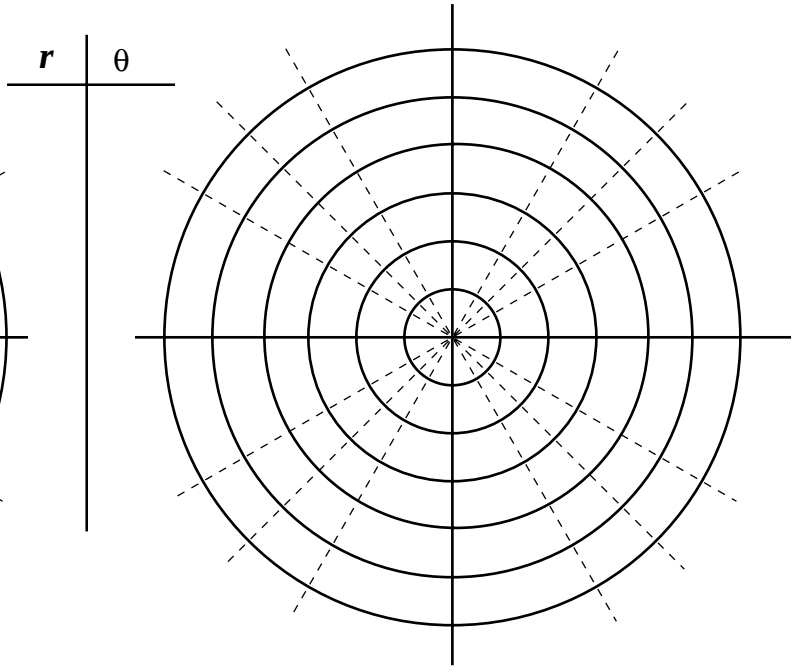
Extra Credit •••••••••••••••••••••••••••••••••••• 5 pts ••

A train goes from Sacramento to Fresno averaging forty km/h and returns averaging sixty km/h. Assuming no time is lost turning around, what is the average speed for the round trip?

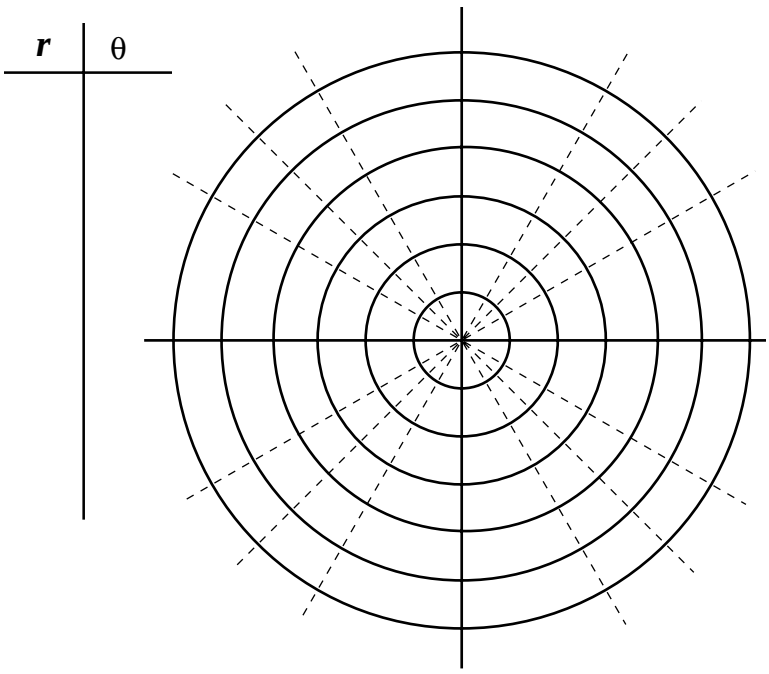
V A)



V B)



V C)



V D)