

PRECALC CHAP TEST CHAP 8 (1-13)

Chapter Test

Problems 1-3, plot each point given in polar coordinates.

1. $\left(2, \frac{3\pi}{4}\right)$

2. $\left(3, -\frac{\pi}{6}\right)$

3. $\left(-4, \frac{\pi}{3}\right)$

4. Convert $(2, 2\sqrt{3})$ from rectangular coordinates to polar coordinates (r, θ) , where $r > 0$ and $0 \leq \theta < 2\pi$.

Problems 5-7, convert the polar equation to a rectangular equation. Graph the equation by hand.

5. $r = 7$

6. $\tan \theta = 3$

7. $r \sin^2 \theta + 8 \sin \theta = r$

Problems 8-9, test each of the polar equations for symmetry with respect to the pole, the polar axis, and the line $\theta = \frac{\pi}{2}$.

8. $r^2 \cos \theta = 5$

9. $r = 5 \sin \theta \cos^2 \theta$

Problems 10-12, perform the given operation, given $z = 2(\cos 85^\circ + i \sin 85^\circ)$ and $w = 3(\cos 22^\circ + i \sin 22^\circ)$. Write your answer in polar form.

10. $z \cdot w$

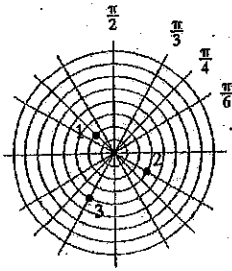
11. $\frac{w}{z}$

12. w^5

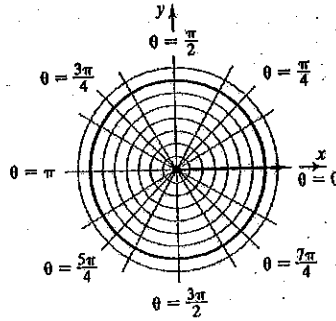
13. Find all the cube roots of $-8 + 8\sqrt{3}i$. Write all answers in the form $a + bi$ and then plot them in rectangular coordinates.

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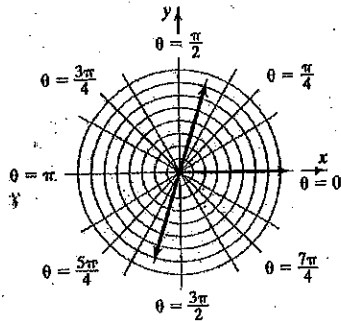
1.-3.



4. $(4, \frac{\pi}{3})$ 5. $x^2 + y^2 = 49$

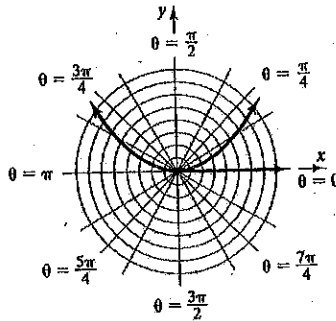


6. $\frac{y}{x} = 3$ or $y = 3x$



7. $8y = x^2$ or $4(2)y = x^2$

The graph is a parabola with vertex $(0, 0)$ and focus $(0, 2)$.



8. $r^2 \cos \theta = 5$ is symmetric about the pole, the polar axis, and the line $\theta = \frac{\pi}{2}$. 9. $r = 5 \sin \theta \cos^2 \theta$ is symmetric about the line $\theta = \frac{\pi}{2}$. The test for symmetry about the pole and the polar axis fail, so the graph of $r = 5 \sin \theta \cos^2 \theta$ may or may not be symmetric about the pole or polar axis.

10. $z \cdot w = 6(\cos 107^\circ + i \sin 107^\circ)$ 11. $\frac{w}{z} = \frac{3}{2}(\cos 297^\circ + i \sin 297^\circ)$ 12. $w^5 = 243(\cos 110^\circ + i \sin 110^\circ)$

13. $z_0 = 2\sqrt[3]{2}(\cos 40^\circ + i \sin 40^\circ)$, $z_1 = 2\sqrt[3]{2}(\cos 160^\circ + i \sin 160^\circ)$, $z_2 = 2\sqrt[3]{2}(\cos 280^\circ + i \sin 280^\circ)$

