

YOU MUST DO YOUR WORK ON A SEPARATE PIECE OF PAPER FOR ALL EXCEPT #13.

Write in polar form (θ to the nearest tenth)

1. $-2 + 8i$

2. $-5i$ (use radians)

Write in rectangular form.

3. $18cis330^\circ$

Write in rectangular form.

4. $18cis201^\circ$ (nearest tenth)

#5 and 6. Answer in both polar and rectangular form.

5. $z_1 = 9cis60^\circ$ and $z_2 = 8cis90^\circ$

a) Find $z_1 z_2$

b) z_1^3

c) $\frac{z_1}{z_2}$

6. Given $z = 2cis\frac{5\pi}{6}$. Find z^{-3}

7. Find $\left(\frac{\sqrt{3}}{2} - \frac{1}{2}i\right)^{10}$

8) Find $(-2 + 3i)^6$ in rectangular form. (keep precise answers on calc.)

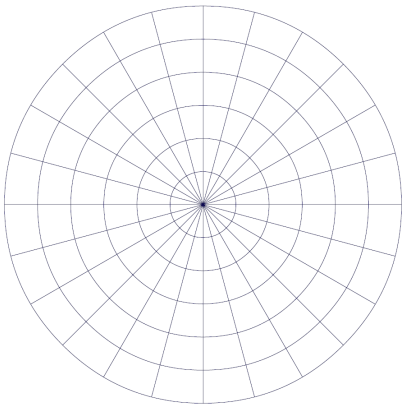
9. Find the cube roots of $8i$. Express answers in rectangular form

10. Find the square roots of $-\sqrt{2} + i\sqrt{2}$. Express answers in rectangular form.

11. Change $(-5, -8)$ to polar coordinates. (nearest tenth)

12) Change $\left(18, \frac{2\pi}{3}\right)$ to rectangular coordinates.

13. Make a table of values and graph $r = 1 + 4\sin\theta$ (limaçon)



Answers

1. $(2\sqrt{17} \text{cis} 104.0^\circ)$ 2. $5 \text{cis} \frac{3\pi}{2}$ 3. $9\sqrt{3} - 9i$ 4. $-16.8 - 6.5i$

5a. $72 \text{cis} 150^\circ = -36\sqrt{3} + 36i$ 5b. $729 \text{cis} 180^\circ = -729 + 0i$ 5c. $\frac{9}{8} \text{cis} 330^\circ = \frac{9\sqrt{3}}{16} - \frac{9}{16}i$

6a. $\frac{1}{8} \text{cis} \frac{3\pi}{2} = 0 - \frac{1}{8}i$ 7. $\frac{1}{2} + \frac{\sqrt{3}}{2}i$ 8. $2035 + 828i$

9. $2 \text{cis} 30^\circ = \sqrt{3} + i$; $2 \text{cis} 150^\circ = -\sqrt{3} + i$; $2 \text{cis} 270^\circ = 0 - 2i$

10. $0.54 + 1.31i$; $0.54 - 1.31i$ 11. $(\sqrt{89}, 238.0^\circ)$ 12. $(-9, 9\sqrt{3})$

13.

