Pre-calculus
Trig Ch. 5/6 Review

Name: _____
Period: _____

Write the complex number in standard form:

1. $\sqrt{-64}$

2. $\sqrt{25} + \sqrt{-9}$

3. $11 + \sqrt{-48}$

Simplify and write the complex number in standard form:

3. $(4 - 8i) + (5 + 3i)$

5. $(-2 - 4i) - (5 - 8i)$

6. $\sqrt{-12} \cdot \sqrt{-27}$

7. $3i(2 + 5i) + 2i(3 - 4i)$

8. $3 - (4 - 3i)$

9. $(6 + 5i)(2 - 5i)$

10. $\frac{-8}{2i}$

11. $\frac{5}{3+4i}$

12. $\frac{4+i}{3+5i}$

Evaluate the powers of i:

13. i^{66}

14. $-i^{51}$

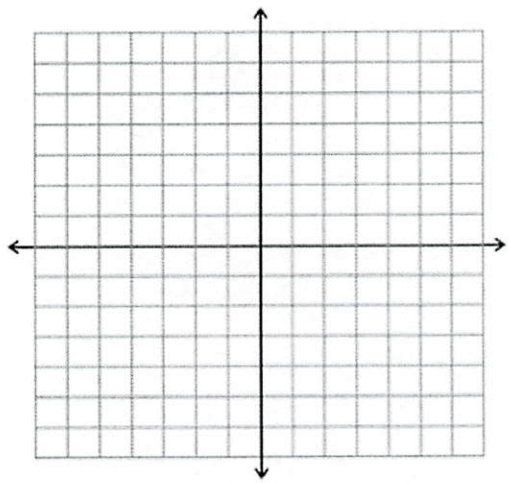
15. i^{-52}

Graph each complex number and find it's **absolute value:**

16. $z = 1 + i\sqrt{3}$

17. $z = -5$

18. $z = 2 - 7i$



Write each complex number in trigonometric form using **radians** (in terms of π):

19. $z = -4 - 4i$

20. $-2i$

21. $1 + i\sqrt{3}$

Write each complex number in **standard form**:

22. $z = 6(\cos 210° + i\sin 210°)$

23. $z = 6\ cis\ 135°$

24. $z = 9\ cis\ \frac{4\pi}{3}$

25. $z = 4\left(\cos\frac{5\pi}{3} + i\sin\frac{5\pi}{3}\right)$

Multiply or divide the complex numbers and write your answers in **standard form:**

26. $4\ cis\ 120° \cdot 6\ cis\ 120°$

27. $\frac{15cis\ 240°}{3\ cis\ 135°}$

28. $8\ (\cos 76° + i\sin 76°) \cdot 7\ (\cos 144° + i\sin 144°)$

29. $\frac{9\ (\cos 25° + i\sin 25°)}{3(\cos 175° + i\sin 175°)}$

30. Find all indicated powers. Write all answers in **standard form.**

A. $(\cos 240° + i\sin 240°)^{12}$

B. $(2\ cis\ 330°)^4$

C. $(2\sqrt{3} - 2i)^5$

D. $\left(-\frac{\sqrt{2}}{2} + i\ \frac{\sqrt{2}}{2}\right)^{12}$

30. Find the indicated roots. Write all answers in **standard form.**

A. The four fourth roots of -16

B. The three cube roots of i.

C. The five fifth roots of $-1+i$.

31. Convert each of the following points from polar to rectangular coordinates.

A. $(2,\pi)$ B. $\left(4,\frac{\pi}{4}\right)$ C. $\left(1,\frac{\pi}{6}\right)$

32. Convert each of the following points from rectangular to polar coordinates:
(Use **radians** for θ)

A. $\left(-2\sqrt{3},2\right)$ B. $(8,-15)$ C. $\left(\frac{\sqrt{2}}{2},-\frac{2}{2}\right)$

33. Find a rectangular form of each of the polar equations.

A. $r=-4\sin\theta$ B. $r=2\csc\theta$ C. $r(2\cos\theta+\sin\theta)=8$

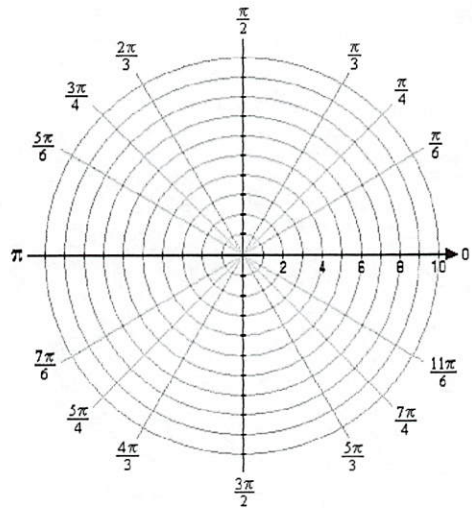
34. Find a polar form of each equation.

A. $y = -6$ B. $3x + 4y = 9$ C. $x^2 + y^2 = 6y$

35. Plot the coordinate on the polar coordinate system.

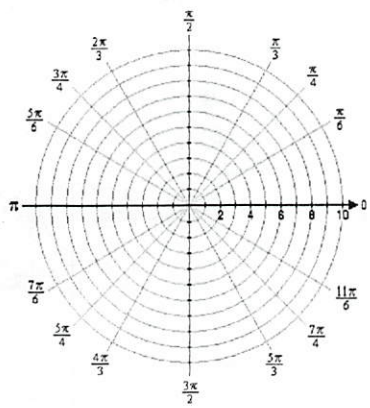
A. $\left(3, \frac{3\pi}{4}\right)$ B. $\left(-2, \frac{\pi}{3}\right)$

C. $\left(-1, -\frac{5\pi}{6}\right)$ D. $\left(4, -\frac{3\pi}{4}\right)$

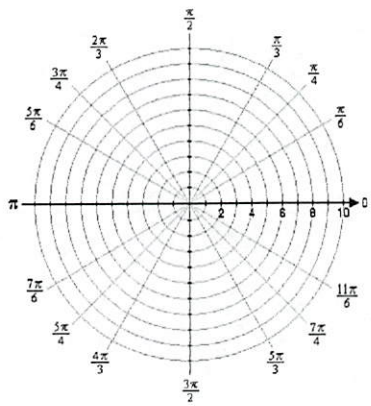


Sketch the graph of each polar equation. Identify the type and any key features:

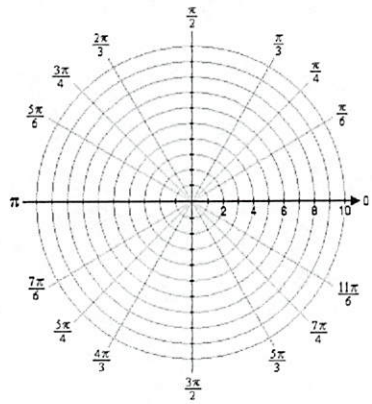
36. $r = -3\sin\theta$



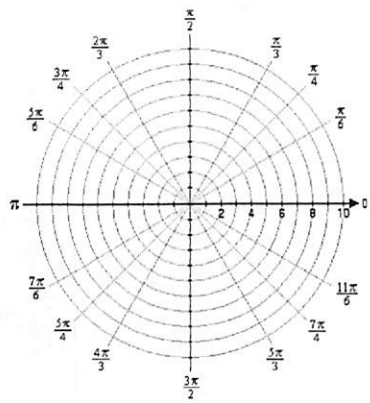
37. $r = 7csc\theta$



38. $r = 2 + 4\sin\theta$



39. $r = 4 - 4\cos\theta$



40. $r = 5\cos 3\theta$