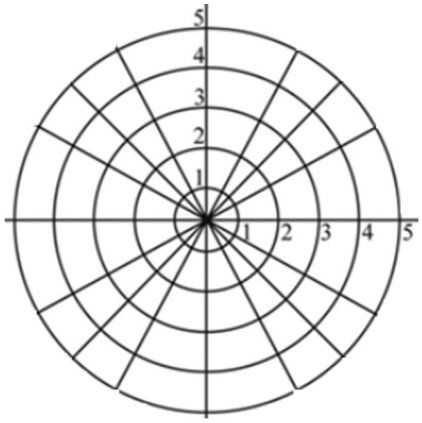
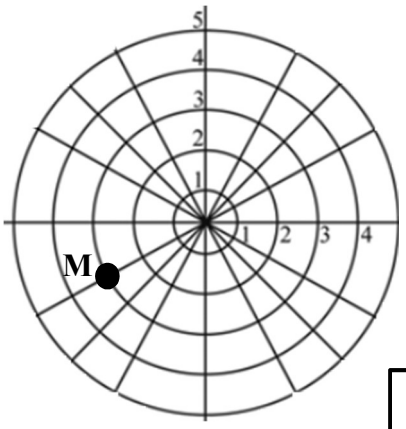
Ch.8 Review#1—NO CALCULATOR!! Name: Per:

1. Graph the point (-4, $\frac{4\pi}{3}$) and label it A.



2. Fill in each blank to name four possible coordinates for point M. $-2\pi \le \theta \le 2\pi$



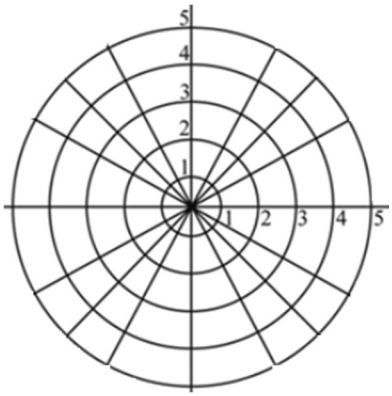
a. (3, _____)

b. (3, _____)

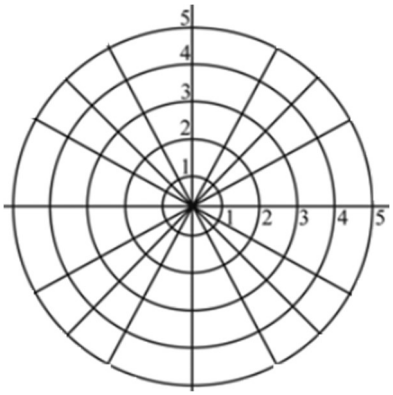
c. (-3, _____)

d. (-3, _____)

3. Graph the polar equation r = 2



4. Graph the polar equation $\theta = \frac{5\pi}{6}$



CHECK ANSWERS #2, 6-13

-1 0 1

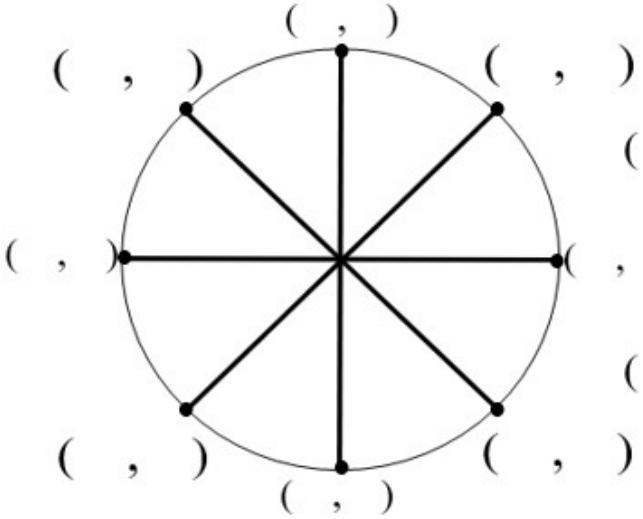
$-\frac{\sqrt{3}}{2}$ $\frac{\sqrt{2}}{2}$

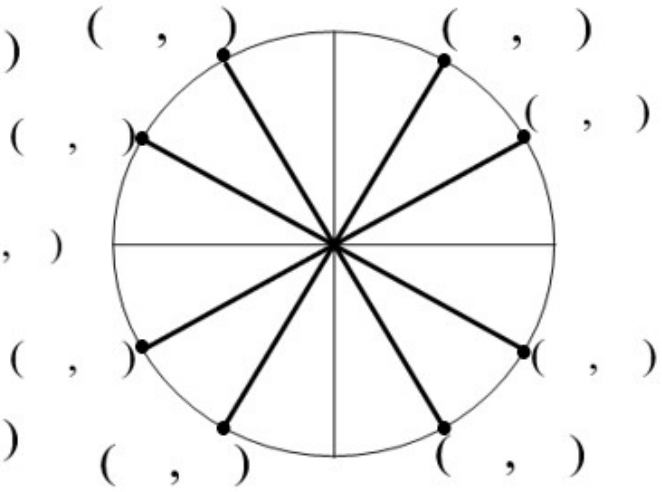
$-\frac{11\pi}{6}$ $-\frac{5\pi}{6}$ π

$\frac{\pi}{6}$ $\frac{\pi}{6}$ $\frac{7\pi}{6}$

$\frac{3\pi}{4}$ $\frac{5\pi}{4}$ $\frac{5\pi}{3}$

5. Label the radian values AND the coordinates of the *highlighted* points of the given unit circles.





Evaluate using *exact* answers from the unit circle.

6. $\sin \frac{3\pi}{4} =$

7. $\tan \frac{7\pi}{4} =$

8. $\cos \frac{7\pi}{6} =$

9. $\sin \frac{\pi}{2} =$

For #10-11, solve for **principal values**. Then solve the general expressions in **#12,13 by finding two values each** for $0 \le \theta < 2\pi$.

10. Arctan $\left(\frac{-4\sqrt{3}}{4}\right) =$

11. Arcsin $\left(\frac{1}{2}\right) =$

12. arccos $\left(\frac{-\sqrt{2}}{2}\right) =$

13. arctan (0) =

Reminders: $r = \sqrt{\quad + \quad}$ **or** $r^2 =$ _____ + _____ $\tan\theta =$ $x =$ _____ $y =$ _____

14. Find the ***polar*** coordinates of the point with rectangular coordinates (-5, 5). Be sure that $0 \le \theta < 2\pi$ for your final solution. Show work. *Express r as an exact value and θ in radians.*

15. Find the ***rectangular*** coordinates of the point with polar coordinates $(-2, \frac{4\pi}{3})$. Show work and use exact values.

Simplify #16-18. Show all steps.

16. $(8 - i) - 3(-1 + 5i)$

17. $(2 + 5i)^2 =$

18. $\frac{6+2i}{-2+i} =$

19. Express $-4 + 4i$ in polar form. Show work. *Hint: find r and θ.*

20. Express $2(\cos\frac{5\pi}{6} + i\sin\frac{5\pi}{6})$ in rectangular form. Show work. *Hint: simplify as is.*

21. Identify the modulus and the argument (show work), then find the product. Express answer in polar form.
$4(\cos\frac{2\pi}{3} + i\sin\frac{2\pi}{3}) \bullet 3(\cos\frac{7\pi}{6} + i\sin\frac{7\pi}{6})$

22. Identify the modulus and the argument (show work), then find the quotient. Express answer in polar form.
$6(\cos\frac{3\pi}{2} + i\sin\frac{3\pi}{2}) \div 4(\cos\frac{3\pi}{4} + i\sin\frac{3\pi}{4})$

23. Use De Moivre's Theorem to find $\left(2 + 2\sqrt{3}i\right)^6$. Express your result in rectangular form. Show work.

Write the given equation in polar form. Show all steps! (*HINT: use substitution to solve.)*

24. $y = 12$

25. $x^2 + y^2 - 2x = 0$

Write the given equation in rectangular form. Show all steps! (*HINT: use substitution to solve.)*

26. $r^2 - 2r\sin\theta = 0$

27. $r = \frac{8}{\cos\theta}$

CHECK ANSWERS

$r\cos\theta \quad x^2 + y^2$

$r\sin\theta \quad x^2 + y^2$

$-21 + 20i \quad \frac{y}{x}$

$-2 - 2i$

$-\sqrt{3} + i$

$\frac{3}{2}\left(\cos\frac{3\pi}{4} + i\sin\frac{3\pi}{4}\right)$

$12\left(\cos\frac{11\pi}{6} + i\sin\frac{11\pi}{6}\right)$

$11 - 16i$

$\left(1, \sqrt{3}\right)$

$\left(5\sqrt{2}, \frac{3\pi}{4}\right)$

$4\sqrt{2}\left(\cos\frac{3\pi}{4} + i\sin\frac{3\pi}{4}\right)$

$\frac{3}{2} \quad 12 \quad 4096$

$\frac{3\pi}{4} \quad \frac{11\pi}{6}$

$x = 8$

$r = 12\csc\theta$

$r = 2\cos\theta$

$x^2 + y^2 - 2y = 0$