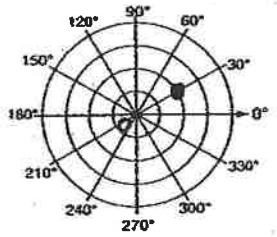
Chapter 8

NAME _____ DATE _____ PERIOD _____

Review

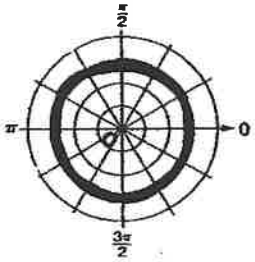
Write the letter for the correct answer in the blank at the right of each problem.

1. Find the polar coordinates that do *not* describe the point in the given graph.
   - **A.** $(-2, 30°)$
   - **B.** $(-2, 210°)$
   - **C.** $(2, 30°)$
   - **D.** $(-2, -150°)$



1. _____

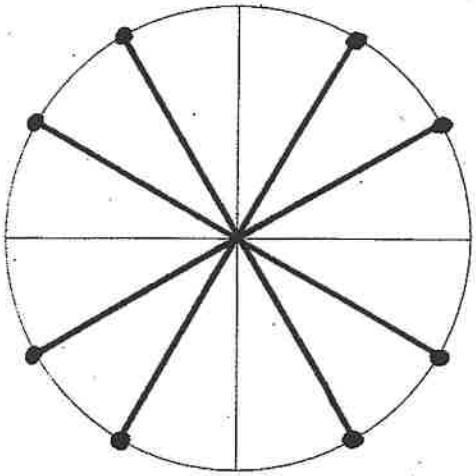
2. Find the equation represented in the given graph.
   - **A.** $\theta = 3$
   - **B.** $r = 3$
   - **C.** $\theta = 2\pi$
   - **D.** $r = 2$



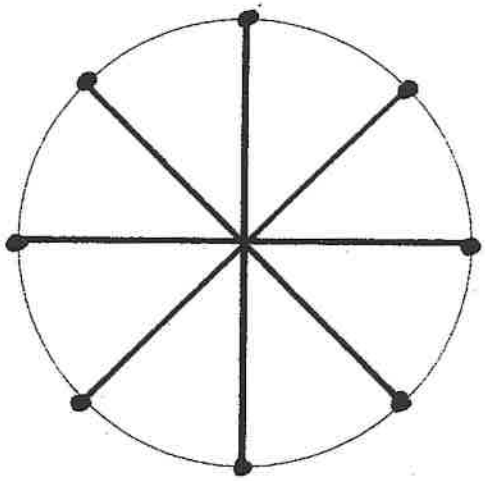
2. _____

Label the radian values AND the coordinates of the highlighted points for each unit circle.

3.



4.



5. a) $\sin\theta =$

   b) $\cos\theta =$

   c) $\tan\theta =$

Check #6, 7

-1	$\frac{5\pi}{3}$
$-\frac{1}{2}$	$\frac{5\pi}{6}$
0	$\frac{7\pi}{6}$
$\frac{\sqrt{3}}{2}$	$\frac{11\pi}{6}$
$\frac{\pi}{4}$	
$\frac{3\pi}{4}$	

6. Evaluate using *exact* answers. Refer to the tables listed above.

   a. $\sin\frac{2\pi}{3} =$ b. $\tan\frac{7\pi}{4} =$ c. $\sin\frac{7\pi}{6} =$ d. $\cos\frac{\pi}{2} =$

7. Evaluate using *radians*. Be sure to find the proper number of solutions.

   All solutions should be in the interval: $0 \le \theta < 2\pi$

   lowercase = 2 general solutions

   uppercase = 1 solution (principal value)

   a. $\arccos\left(\frac{-\sqrt{3}}{2}\right) =$ b. $\text{Arcsin}\left(\frac{-1}{2}\right) =$ c. $\arcsin\left(\frac{\sqrt{2}}{2}\right) =$ d. $\text{Arctan}\left(\frac{-2\sqrt{3}}{2}\right) =$

⊛SHOW WORK!! (#8-20)

*8. Find the polar coordinates of the point with rectangular coordinates $(\sqrt{3}, 1)$. 8. _____

A. $\left(2, \frac{\pi}{3}\right)$ B. $\left(2, \frac{\pi}{6}\right)$ C. $\left(2, \frac{\pi}{4}\right)$ D. $\left(1, \frac{\pi}{6}\right)$

Check answers: (front and back)

*9. Find the rectangular coordinates of the point with polar coordinates $(3, 180°)$. 9. _____

A. $(-3, 0)$ B. $(0, 3)$ C. $(3, 0)$ D. $(0, -3)$

*10. Write the rectangular equation $x = 3$ in polar form. 10. _____

A. $r \sin \theta = 3$ B. $r = 3$

C. $\theta = 3$ D. $r \cos \theta = 3$

AA
BB
CD

*11. Write the polar equation $r = 3$ in rectangular form. 11. _____

A. $x^2 - 9 = 0$ B. $x^2 + y^2 - 9y = 0$

C. $x^2 + y^2 = 9$ D. $xy = 9$

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*12. Simplify $(3 + i) - 2(i^2 - 5i)$. 12. _____

A. $5 + 11i$ B. $5 + 9i$ C. $1 + 11i$ D. $5 - 9i$

Check #12-16

*13. Simplify $(5 - 3i)(2 + 4i)$. 13. _____

A. $-2 + 14i$ B. $22 + 14i$ C. $22 - 14i$ D. $-2 - 14i$

A

*14. Simplify $\frac{5 + 2i}{3 - 4i}$. 14. _____

B

A. $\frac{7}{25} - \frac{26}{25}i$ B. $\frac{23}{25} + \frac{26}{25}i$ C. $-1 - \frac{26}{7}i$ D. $\frac{7}{25} + \frac{26}{25}i$

C

*15. Express $-2\sqrt{2} + 2\sqrt{2}i$ in polar form. 15. _____

D

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

D

C. $4\left(\cos \frac{3\pi}{4} + i \sin \frac{3\pi}{4}\right)$ D. $4\left(\cos \frac{7\pi}{4} + i \sin \frac{7\pi}{4}\right)$

*16. Express $10\left(\cos \frac{7\pi}{6} + i \sin \frac{7\pi}{6}\right)$ in rectangular form. 16. _____

A. $-5\sqrt{3} + 5i$ B. $-5 + 5\sqrt{3}i$ C. $5\sqrt{3} + 5i$ D. $-5\sqrt{3} - 5i$

For Exercises 17 and 18, let $z_1 = 8\left(\cos \frac{2\pi}{3} + i \sin \frac{2\pi}{3}\right)$ and $z_2 = 0.5\left(\cos \frac{\pi}{3} + i \sin \frac{\pi}{3}\right)$.

Check #17-20

*17. Write the rectangular form of $z_1 z_2$. identify the modulus & amplitude 17. _____

A. $-4i$ B. 4 C. $4 + 4i$ D. -4

A

*18. Write the rectangular form of $\frac{z_1}{z_2}$. modulus=? amplitude=? 18. _____

C

A. $8 + 8\sqrt{3}i$ B. $-8 + 8\sqrt{3}i$ C. $16 + 16\sqrt{3}i$ D. $8 - 8\sqrt{3}i$

D

* 19. Simplify $(\sqrt{3} + i)^4$ and express the result in rectangular form. 19. _____

D

A. $8 + 8\sqrt{3}i$ B. $8 - 8\sqrt{3}i$ C. $16 + 16\sqrt{3}i$ D. $-8 + 8\sqrt{3}i$

* 20. Find $\sqrt[3]{i}$. 20. _____

A. $\frac{\sqrt{3}}{2} - \frac{1}{2}i$ B. $-\frac{\sqrt{3}}{2} + \frac{1}{2}i$ C. $\frac{\sqrt{3}}{2} + \frac{1}{2}i$ D. $\frac{1}{2} + \frac{\sqrt{3}}{2}i$

Use DeMoivre's Theorem!