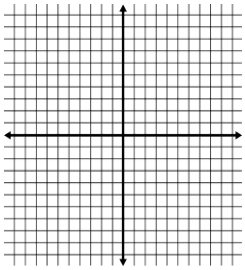
Accel Precalc Handout: Polar Coordinates Name _____
Unit #8: Extended Trigonometry
Lesson 4: Polar Coordinates

EQ:

Recall: *Rectangular Coordinate Plane*

origin quadrants

coordinates P(____, ____)

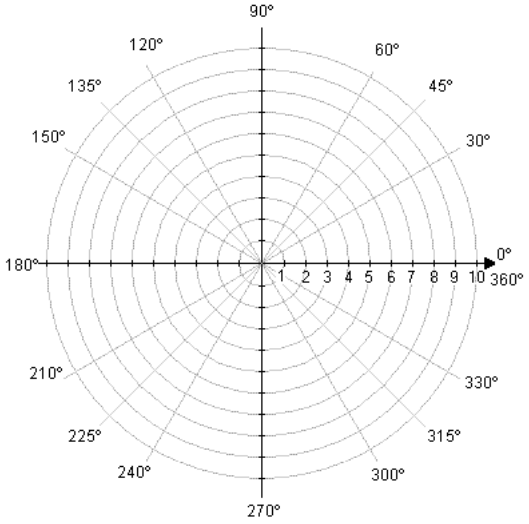


Polar Coordinate System

pole P(_____, _____)

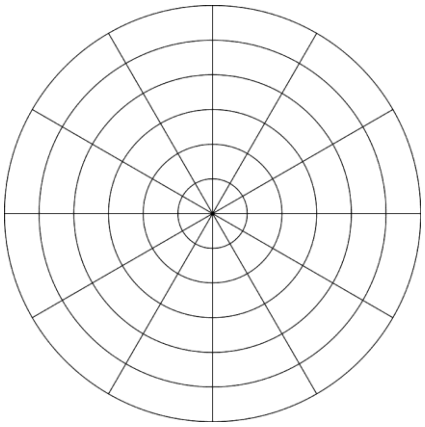
r →

-r →

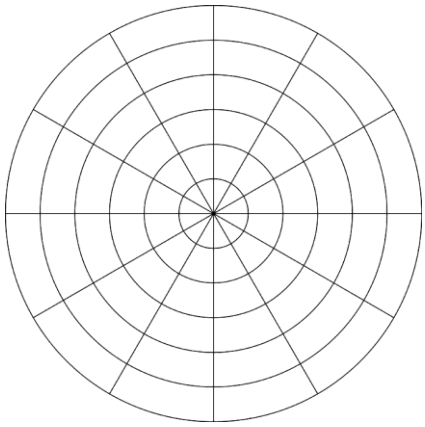


Ex. Graph these points.

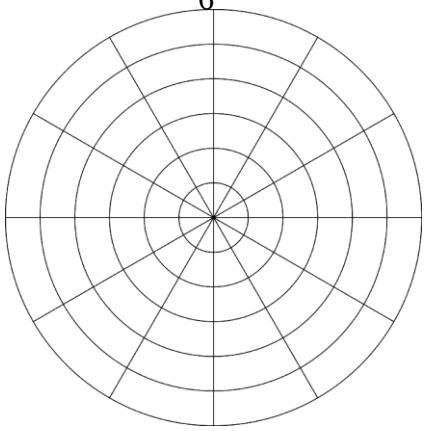
1. $(2, \frac{\pi}{4})$



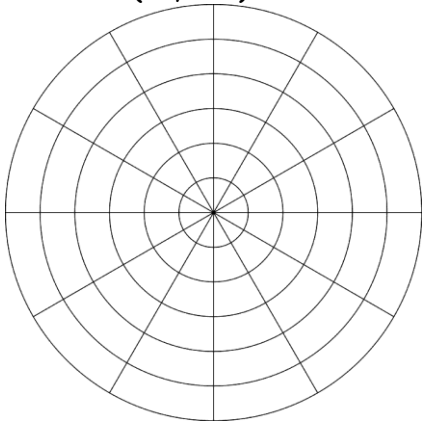
2. $(3, -300°)$



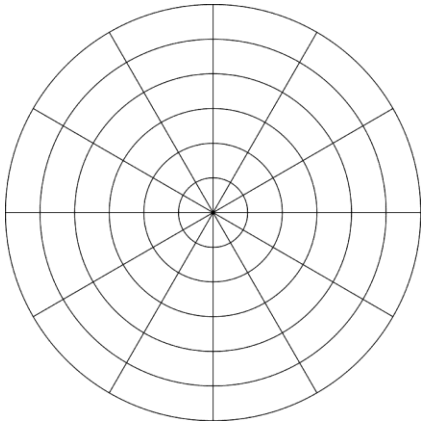
3. $(-2, \frac{-\pi}{6})$



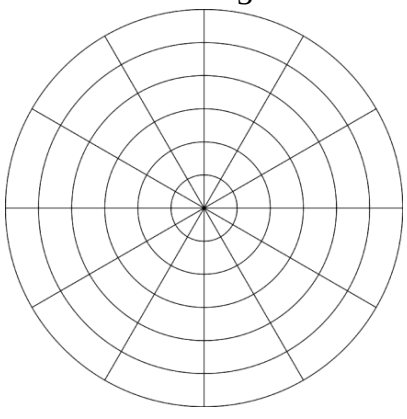
4. $(-2, 30°)$



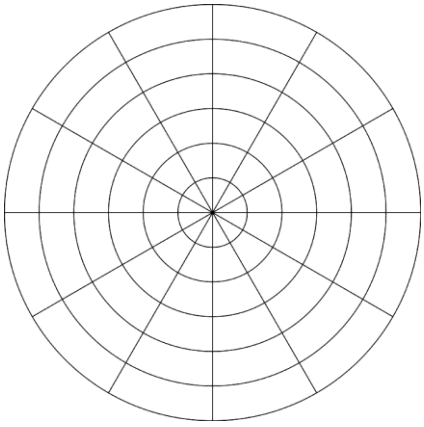
5. $r = 4$



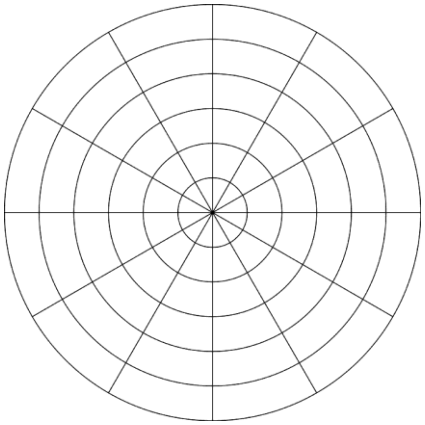
6. $\theta = \frac{2\pi}{3}$



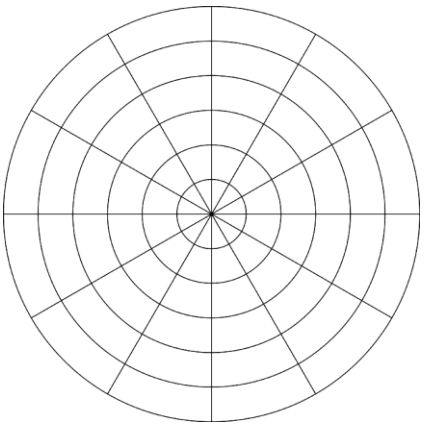
7. $(3, 60°)$



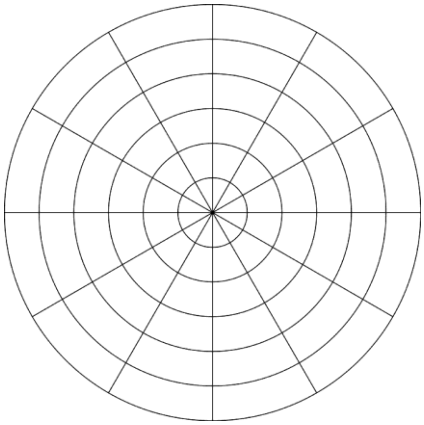
8. $(-2, 150°)$



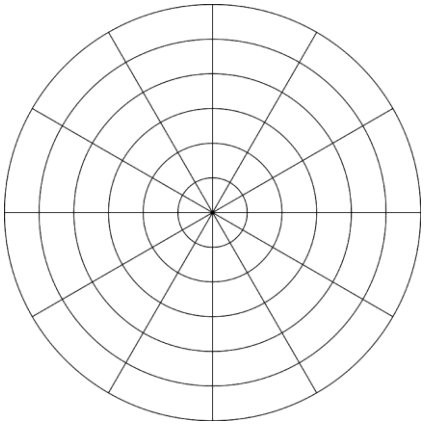
9. $(-2, \frac{-\pi}{3})$



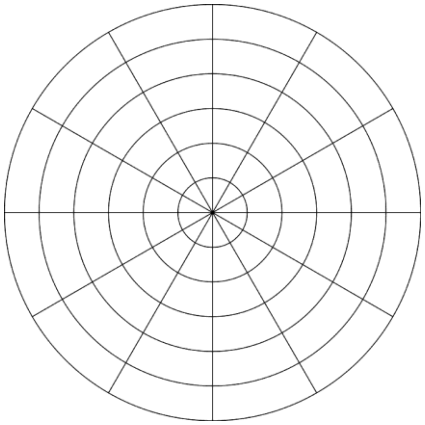
10. $(-1, 0°)$



11. $(2, \frac{-\pi}{4})$



12. $(3, \frac{-3\pi}{2})$



Part II: Alternative Forms of the Coordinate of a Point

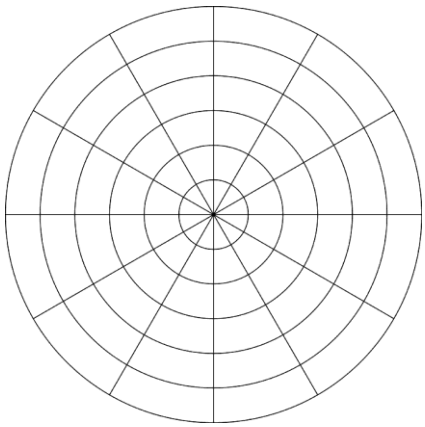
Given P(3, 60°), state **4** pair of polar coordinates meeting the following conditions:

I. $r > 0$ and $0° \leq \theta < 360°$ _____

II. $r < 0$ and $0° \leq \theta < 360°$ _____

III. $r > 0$ and $-360° \leq \theta < 0°$ _____

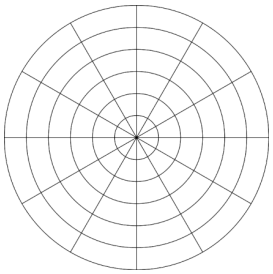
IV. $r < 0$ and $-360 \leq \theta < 0°$ _____



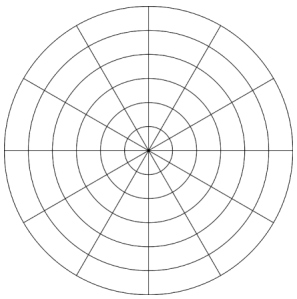
Ex. Rename (r, θ) using the above conditions for I, II, III, and IV.

(r, θ)	(+, +)	(-, +)	(+, -)	(-, -)

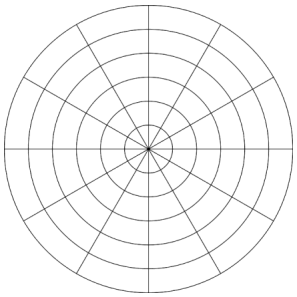
13. (1, 45°)



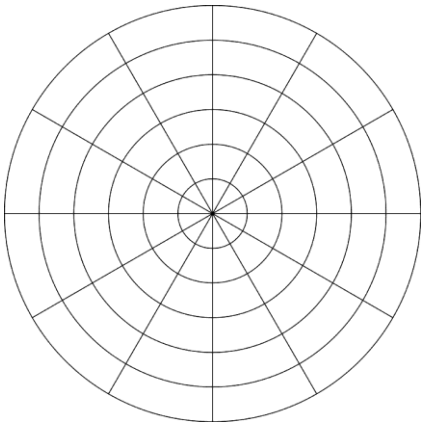
14. (-2, 27°)



15. $(-3, \frac{-7\pi}{6})$



Ex . State the appropriate coordinates for each point.



16. A _____ r < 0 and $0° \leq \theta < 360°$

17. B _____ r > 0 and $-360° \leq \theta < 0°$

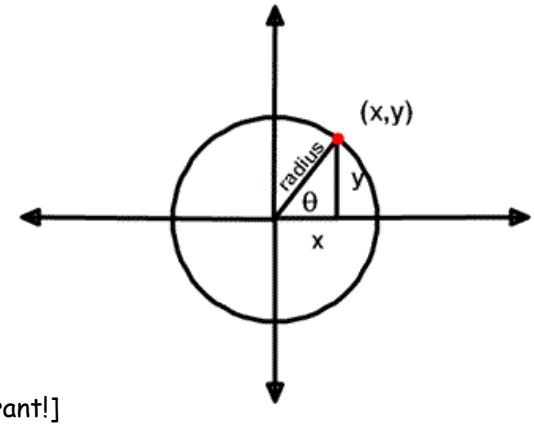
18. C _____ r < 0 and $-360 \leq \theta < 0°$

19. D _____ r > 0 and $0° \leq \theta < 360°$

Assignment: PW #1 #1 – 28

_____ Coordinates ⟺ _____Coordinates

P (_____, _____) → P (____, _____)



Recall: Right Triangle Trig

cos θ = _____ sin θ = _____

$\therefore x$ = _____ $\therefore y$= _____

Ex. Convert polar coordinates to rectangular coordinates. [Check quadrant!]

20. $(6, \frac{\pi}{6})$ = _____ 21. $(-4, \frac{-\pi}{4})$ = _____

P (_____, _____) → P (____, _____)

Recall:

- How can we find **r** if we know x and y?
- How can we find **θ** if we know x and y?

Ex. Convert each rectangular coordinate to a polar coordinate. Give **four** answers for each. [Check quadrant!]

22. (2, -2) = _____

23. $(-1, -\sqrt{3})$ = _____

➢ ASSIGNMENT:

PW #1 Polar Coordinates #29 – 56 ; PW #2 Polar Coordinates ;PW #3 Polar Coordinates