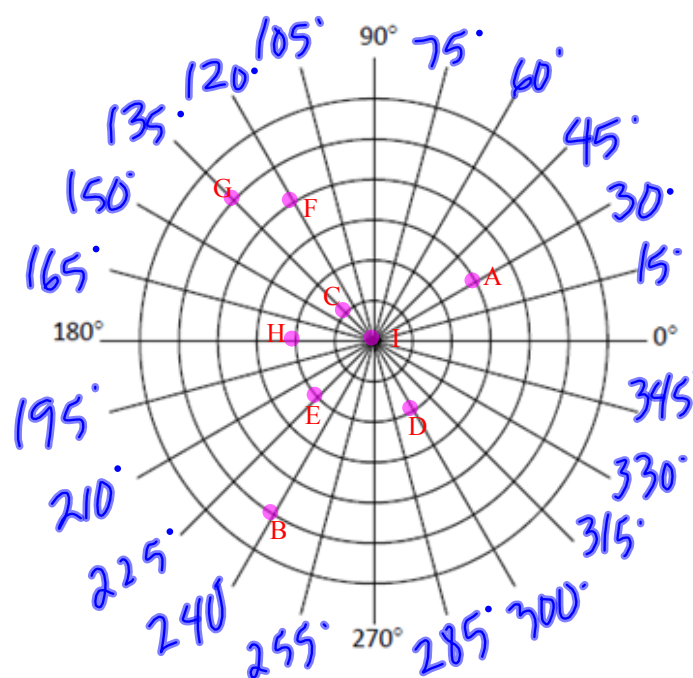


Polar Coordinates

I. Graph and label each point.

1. $A(3, 30^\circ)$
2. $B(5, 240^\circ)$
3. $C(1, 135^\circ)$
4. $D(2, -60^\circ)$
5. $E(-2, 45^\circ)$
6. $F(-4, 300^\circ)$
7. $G(-5, -45^\circ)$
8. $H(-2, 0^\circ)$
9. $I(0, -270^\circ)$



II. State three other pairs of polar coordinates for each point where $-360^\circ < \theta < 360^\circ$. Show work.

10. $(-2, 150^\circ)$

$$= (2, 330^\circ) = (2, -30^\circ) = (-2, -210^\circ)$$

11. $(5, -60^\circ)$

$$= (5, 300^\circ) = (-5, 120^\circ) = (-5, -240^\circ)$$

III. State three other pairs of polar coordinates for each point where $-2\pi < \theta < 2\pi$. Show work.

12. $\left(4, \frac{\pi}{5}\right)$

$$= \left(4, \frac{-9\pi}{5}\right) = \left(-4, \frac{6\pi}{5}\right) = \left(-4, \frac{-4\pi}{5}\right)$$

13. $\left(-3, \frac{2\pi}{3}\right)$

$$= \left(3, \frac{5\pi}{3}\right) = \left(3, \frac{-\pi}{3}\right) = \left(-3, \frac{-4\pi}{3}\right)$$

IV. A point in polar coordinates is given. Convert the point to rectangular coordinates. Show work.

14. $\left(3, \frac{\pi}{2}\right) = (0, 3)$	15. $\left(-1, \frac{5\pi}{4}\right) = \left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$
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	(r, θ)	(x, y)
16. $\left(2, \frac{7\pi}{6}\right) = (-\sqrt{3}, -1)$	17. $(-2.5, 1.1) = (-1.13, -2.23)$ Use a calculator.	

V. A point in rectangular coordinates is given. Convert the point to polar coordinates. Show work.

18. $(-3, -3)$ $= (3\sqrt{2}, 225^\circ)$	19. $(-6, 0)$ $= (6, 180^\circ)$
20. $(4, -4\sqrt{3})$ $= (8, 300^\circ)$	21. $(-3, 4)$ $= (5, 126.9^\circ)$