

Polar/Rectangular Form

Date _____

Convert each pair of polar coordinates to rectangular coordinates.

1) $(-2, -180^\circ)$

2) $\left(-1, \frac{3\pi}{4}\right)$

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

4) $(-2, 315^\circ)$

Convert each pair of rectangular coordinates to polar coordinates where $r > 0$ and $0 \leq \theta < 2\pi$.

5) $(0, 1)$

6) $\left(-\frac{3}{2}, -\frac{3\sqrt{3}}{2}\right)$

7) $\left(-\frac{3\sqrt{2}}{2}, \frac{3\sqrt{2}}{2}\right)$

8) $\left(\frac{3\sqrt{2}}{2}, -\frac{3\sqrt{2}}{2}\right)$

Two points are specified using polar coordinates. Find the distance between the points.

9) $\left(2, \frac{23\pi}{12}\right), \left(4, \frac{7\pi}{12}\right)$

10) $\left(-3, \frac{5\pi}{6}\right), \left(1, \frac{\pi}{3}\right)$

Convert each equation from rectangular to polar form.

11) $x^2 + (y + 3)^2 = 9$

12) $(x + 1)^2 + y^2 = 1$

13) $(x - 2)^2 + y^2 = 4$

Convert each equation from polar to rectangular form.

14) $r = 4\sin \theta$

15) $r = -4\cos \theta$

16) $\tan \theta = 5$

Answers to Polar/Rectangular Form

1) $(2, 0)$

2) $\left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$

3) $(\sqrt{3}, -1)$

4) $(-\sqrt{2}, \sqrt{2})$

5) $\left(1, \frac{\pi}{2}\right)$

6) $\left(3, \frac{4\pi}{3}\right)$

7) $\left(3, \frac{3\pi}{4}\right)$

8) $\left(3, \frac{7\pi}{4}\right)$

9) $2\sqrt{7} \approx 5.292$

10) $\sqrt{10} \approx 3.162$

11) $r = -6\sin \theta$

12) $r = -2\cos \theta$

13) $r = 4\cos \theta$

14) $x^2 + (y - 2)^2 = 4$

15) $(x + 2)^2 + y^2 = 4$

16) $y = 5x$