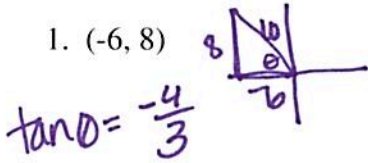


HW 9.5: Polar vs. Rectangular Coordinates**Convert to polar form.**

1. $(-6, 8)$



$\tan \theta = \frac{-4}{3}$

$r = 10$

$\theta = -53.13^\circ$

$(10, 126.87^\circ)$

2. $(3, 9)$



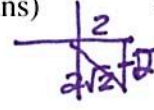
$r = 3\sqrt{10}$

$\tan \theta = \frac{9}{3}$

$\theta = 71.565^\circ$

$(3\sqrt{10}, 71.565^\circ)$

3. $(2, -2)$ (answer in radians)



$r = 2\sqrt{2}$

$\theta = -\frac{\pi}{4}$

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

4. $(2, -5)$



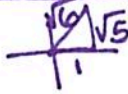
$r = \sqrt{29}$

$\tan \theta = \frac{-5}{2}$

$\theta = -68.192^\circ$

$(\sqrt{29}, -68.192^\circ)$

5. $(1, \sqrt{5})$



$\tan \theta = \frac{\sqrt{5}}{1}$

$\theta = 65.905^\circ$

$r = \sqrt{6}$

$(\sqrt{6}, 65.905^\circ)$

6. $(6, -5)$



$r = \sqrt{61}$

$\tan \theta = \frac{-5}{6}$

$\theta = -39.805^\circ$

$(\sqrt{61}, -39.805^\circ)$

7. $(3, -7)$



$r = \sqrt{58}$

$\tan \theta = \frac{-7}{3}$

$\theta = -66.801^\circ$

$(\sqrt{58}, -66.801^\circ)$

8. $(4, 5)$



$r = \sqrt{41}$

$\tan \theta = \frac{5}{4}$

$\theta = 51.340^\circ$

$(\sqrt{41}, 51.340^\circ)$

Convert to rectangular form.

9. $(3, 55^\circ)$

$x = 3 \cos 55^\circ$
 1.720

$y = 3 \sin 55^\circ$
 2.457

$(1.720, 2.457)$

10. $(-3, 180^\circ)$

$x = -3 \cos 180^\circ$
 $x = 3$

$y = -3 \sin 180^\circ$
 $y = 0$

$(3, 0)$

11. $(2, -240^\circ)$

$x = 2 \cos(-240^\circ)$
 $x = -1$

$y = 2 \sin(-240^\circ)$
 $y = \sqrt{3}$

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

12. $(3, 540^\circ)$

$x = 3 \cos 540^\circ$
 $x = -3$

$y = 3 \sin 540^\circ$
 $y = 0$

$(-3, 0)$

13. $(-1, 2\pi)$

$x = -1 \cos 2\pi$
 $x = -1$

$y = -1 \sin 2\pi$
 $y = 0$

$(-1, 0)$

14. $(5, 90^\circ)$

$x = 5 \cos 90^\circ$
 $x = 0$

$y = 5 \sin 90^\circ$
 $y = 5$

$(0, 5)$

15. $(2, \frac{3\pi}{2})$

$x = 2 \cos \frac{3\pi}{2}$
 $x = 0$

$y = 2 \sin \frac{3\pi}{2}$
 $y = -2$

$(0, -2)$

16. $(-4, 45^\circ)$

$x = -4 \cos 45^\circ$
 $x = -2\sqrt{2}$

$y = -4 \sin 45^\circ$
 $y = -2\sqrt{2}$

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

Plot each point.

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

2. $B\left(3, \frac{5\pi}{6}\right)$

3. $C\left(-5, \frac{\pi}{3}\right)$

4. $D\left(4, \frac{\pi}{2}\right)$

5. $E(5, 2\pi)$

6. $F\left(-4, \frac{2\pi}{3}\right)$

7. $G\left(-1, -\frac{5\pi}{6}\right)$

8. $H\left(2, -\frac{4\pi}{3}\right)$

