

Find 3 additional pairs of polar coordinates that describe the same point as the provided polar coordinates.

5) $(3, \frac{19\pi}{12})$



$(3, \frac{7\pi}{12})$
 $(-3, -\frac{5\pi}{12})$
 $(-3, \frac{19\pi}{12})$

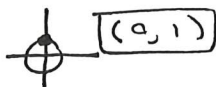
6) $(4, \frac{\pi}{2})$



$(4, \frac{5\pi}{2})$
 $(-4, -\frac{\pi}{2})$
 $(-4, \frac{3\pi}{2})$

Convert each pair of polar coordinates to rectangular coordinates.

7) $(1, \frac{\pi}{2})$



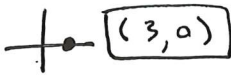
$(0, 1)$

8) $(1, \frac{7\pi}{6})$



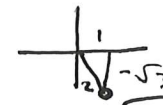
$(-\frac{\sqrt{3}}{2}, -\frac{1}{2})$

9) $(3, 0)$



$(3, 0)$

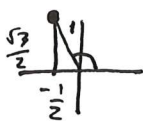
10) $(2, \frac{5\pi}{3})$



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

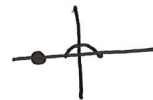
Convert each pair of rectangular coordinates to polar coordinates where $r > 0$ and $0 \leq \theta < 2\pi$.

11) $(-\frac{1}{2}, \frac{\sqrt{3}}{2})$



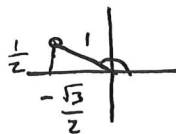
$(1, \frac{2\pi}{3})$

12) $(-3, 0)$



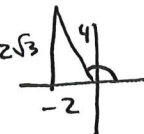
$(3, \pi)$

13) $(-\frac{\sqrt{3}}{2}, \frac{1}{2})$



$(1, \frac{5\pi}{6})$

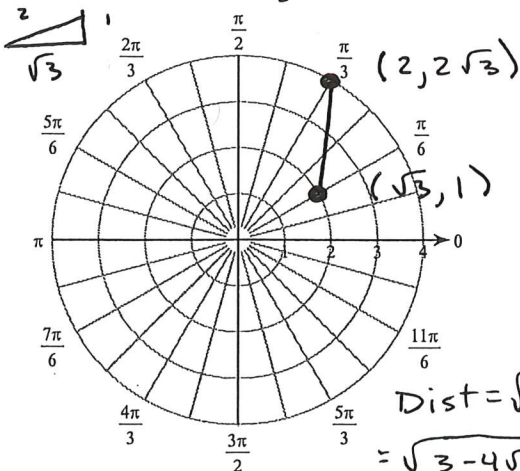
14) $(-2, 2\sqrt{3})$



$(4, \frac{2\pi}{3})$

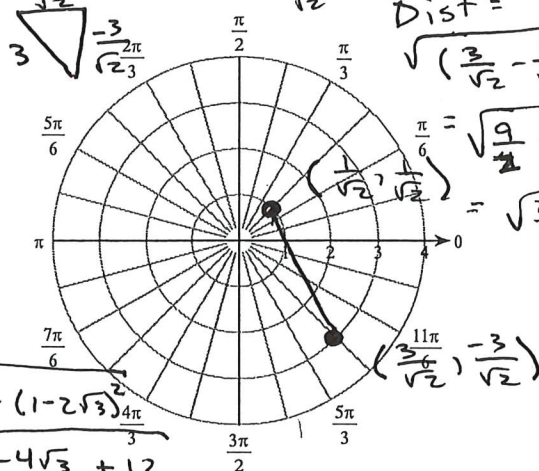
Two points are specified using polar coordinates. Find the distance between the points. Hint: convert to rectangular coordinates first then use a formula - you know - one that finds distance. ;)

21) $(2, \frac{\pi}{6}), (4, \frac{\pi}{3})$



$Dist = \sqrt{(\sqrt{3}-2)^2 + (1-2\sqrt{3})^2}$
 $= \sqrt{3 - 4\sqrt{3} + 4 + 1 - 4\sqrt{3} + 12}$
 $= \sqrt{20 - 8\sqrt{3}}$

22) $(3, \frac{7\pi}{4}), (1, \frac{\pi}{4})$



$Dist = \sqrt{(\frac{3}{\sqrt{2}} - \frac{1}{\sqrt{2}})^2 + (-\frac{3}{\sqrt{2}} - \frac{1}{\sqrt{2}})^2}$
 $= \sqrt{\frac{9}{2} - \frac{6}{2} + \frac{1}{2} + \frac{9}{2} + \frac{6}{2} + \frac{1}{2}}$
 $= \sqrt{\frac{20}{2}} = \sqrt{10}$