Name: Key

Unit H Review

For 1-3, find 3 additional pair of polar coordinates.

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

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

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

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

3) $(1.5, -135^\circ)$

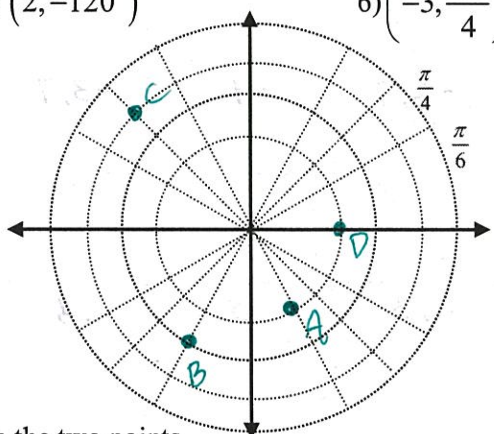
$(1.5, 225^\circ)$ $(-1.5, 45^\circ)$ $(-1.5, -315^\circ)$

4) $(-2, 210^\circ)$

$(2, 30^\circ)$ $(2, -330^\circ)$ $(-2, -150^\circ)$

For 4-7, graph the points.

4) $\left(-1, \frac{2\pi}{3}\right)$ 5) $(2, -120^\circ)$ 6) $\left(-3, \frac{-\pi}{4}\right)$ 7) $(-1, 180^\circ)$



For 8-10, find the distance between the two points.

8) $(2, 150^\circ)$ & $(-4, 300^\circ)$

$D = \sqrt{4+16-[2(2)(-4)\cos(300^\circ-150^\circ)}$

9) $\left(-8, \frac{\pi}{6}\right)$ & $(5, \pi)$

$D = \sqrt{64+25-[2(-8)(5)\cos(180^\circ-30^\circ)}$

10) $(2, -5)$ & $(-3, 4)$

$(\sqrt{29}, 292^\circ)$ + $(5, 127^\circ)$

$D = \sqrt{29+25-[2(\sqrt{29})(5)\cos(127-292)}$

For 11-13, find the polar points.

11) (1,3)

$r = \pm\sqrt{1+9}$

$r = \pm\sqrt{10}$

$\tan\theta = \frac{3}{1}$

$\theta = 72^\circ$

$\boxed{(\sqrt{10}, 72^\circ) + (-\sqrt{10}, 252^\circ)}$

12) $(2\sqrt{2}, -5)$

$r = \pm\sqrt{8+25}$

$= \pm\sqrt{33}$

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

$\theta = 299^\circ$

$\boxed{(\sqrt{33}, 299^\circ) + (-\sqrt{33}, 119^\circ)}$

13) $(-3, \sqrt{3})$

$r = \pm\sqrt{9+3}$

$= \pm 2\sqrt{3}$

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

150°

$\boxed{(2\sqrt{3}, 150^\circ) + (-2\sqrt{3}, 330^\circ)}$

For 14-16, find the rectangular points.

14) $\left(-3,100^\circ\right)$

$x=-3\cos 100^\circ$ $\quad y=-3\sin 100^\circ$

$x=.5$ $\quad y=-3$

$\boxed{(.5,-3)}$

15) $\left(2,-150^\circ\right)$

$x=2\cos(-150^\circ)$ $\quad y=2\sin(-150^\circ)$

$=2\cos(210^\circ)$ $\quad y=2\sin(210^\circ)$

$=\sqrt{3}$

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

16) $\left(-1,\dfrac{5\pi}{4}\right)$

$x=-1\cos\left(\frac{5\pi}{4}\right)$ $\quad y=-1\sin\left(\frac{5\pi}{4}\right)$

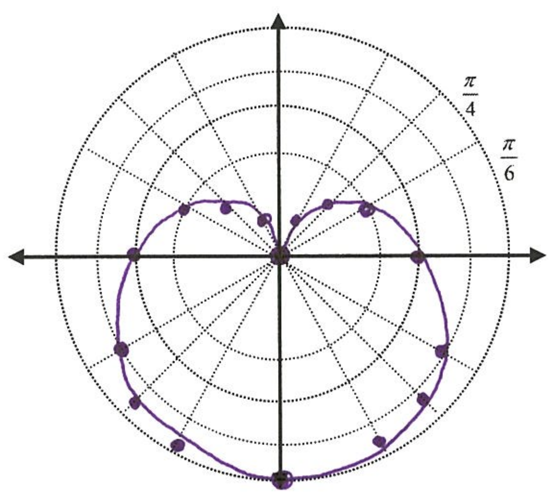
$x=+\frac{\sqrt{2}}{2}$ $\quad y=+\frac{\sqrt{2}}{2}$

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

17) Complete the table and graph r = -2sinθ - 2. Then identify the shape. Limacon

θ	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$	$\frac{2\pi}{3}$	$\frac{3\pi}{4}$	$\frac{5\pi}{6}$
r	-2	-3	-3.4	-3.7	-4	-3.7	-3.4	-3

θ	π	$\frac{7\pi}{6}$	$\frac{5\pi}{4}$	$\frac{4\pi}{3}$	$\frac{3\pi}{2}$	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$
r	-2	-1	-.6	-.3	0	-.3	-.6	-1



For 18-21, convert the polar equation to rectangular or vice-versa.

18) $r[-2\sin(\theta)+3\cos(\theta)]=2$

$-2r\sin\theta+3r\cos\theta=2$

$-2(y)+3(x)=2$

$\boxed{-2y+3x=2}$

19) $\theta=-\dfrac{\pi}{4}$

$\tan\theta=\frac{y}{x}$

$\tan\left(-\frac{\pi}{4}\right)=\frac{y}{x}$

$-1=\frac{y}{x}$

$\boxed{y=-x}$

20) $x^2+y^2=7y$

$(r\cos\theta)^2+(r\sin\theta)^2=7(r\sin\theta)$

$r^2\left[\cos^2\theta+\sin^2\theta\right)=7r\sin\theta$

$\frac{r^2}{r}=\frac{7r\sin\theta}{r}$

$\boxed{r=7\sin\theta}$

21) $x=6$

$\frac{r\cos\theta}{\cos\theta}=\frac{6}{\cos\theta}$

$\boxed{r=6\sec\theta}$