

Honors Pre-Calc
6.4-6.5 Quiz Review

Name _____
Date _____ Block _____

Give three different expressions for the point such that:

a.) $r < 0$ and $0 \leq \theta \leq 2\pi$

b.) $r > 0$ and $\theta \leq 0$

c.) $r > 0$ and $2\pi \leq \theta$

1.) $(12, -\frac{7\pi}{6})$ (a) $(-12, \frac{11\pi}{6})$

(b) $(12, -\frac{19\pi}{6})$

(c) $(12, \frac{17\pi}{6})$

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

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

(c) $(2, \frac{7\pi}{3})$

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

(b) $(4, -\frac{7\pi}{4})$

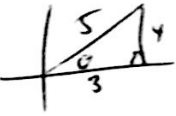
(c) $(4, \frac{9\pi}{4})$

Convert the point from polar to rectangular.

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

5.) $(-5, -\frac{9\pi}{4})$

6.) $(-3, \arctan \frac{4}{3})$



$(2 \cos \frac{\pi}{3}, 2 \sin \frac{\pi}{3})$

$(-5 \cos -\frac{\pi}{4}, -5 \sin -\frac{\pi}{4})$

$(-3 \cos \theta, -3 \sin \theta)$

$(1, \sqrt{3})$

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

$(-\frac{9}{5}, -\frac{12}{5})$

Convert the point from rectangular to polar with $r \geq 0$ and $0 \leq \theta \leq 2\pi$.

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

8.) $(-3, 0)$

9.) $(24, -7)$

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

$(3, \pi)$

$(25, \arctan(-\frac{7}{24}))$
 5.9994

Convert the equation from rectangular to polar.

10.) $(x+2)^2 + y^2 = 4$

11.) $y = -3x^2$

$x^2 + 4x + 4 + y^2 = 4$

$r \sin \theta = -3r^2 \cos^2 \theta$
 $\frac{r \sin \theta}{-3r^2 \cos^2 \theta} = \frac{-3r^2 \cos^2 \theta}{-3r^2 \cos^2 \theta}$

$r^2 + 4r \cos \theta = 0$

$r(r + 4 \cos \theta) = 0$

$-\frac{1}{3} \tan \theta \sec \theta = r$

$r = -4 \cos \theta$

Convert the equation from polar to rectangular.

12.) $r = 7 \sec \theta$

$$r = \frac{7}{\cos \theta}$$

$$x = 7$$

13.) $r = -2 \sin \theta$

$$r^2 = -2r \sin \theta$$

$$x^2 + y^2 = -2y$$

$$x^2 + y^2 + 2y + 1 = 1$$

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

Complete the table.

$$\frac{\pi}{2 \cdot 4} = \pi/8$$

$$\frac{2\pi}{8} = \frac{\pi}{4}$$

$$\frac{2\pi}{1}$$

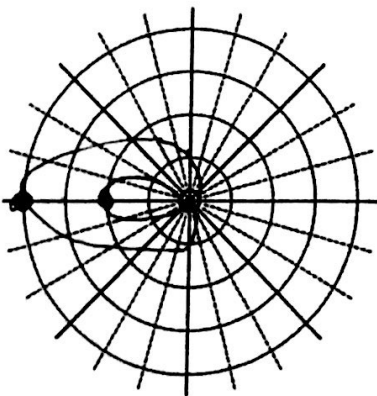
Polar Curve	Type	Symmetry	Max r-value point
14.) $r = 6 \sin \theta$	Circle	$\theta = \pi/2$	$(6, \pi/2)$
15.) $r = 5 \sin(4\theta)$	Rose Curve	$\theta = \pi/2$ both pole	$(5, \frac{\pi}{8} + \frac{\pi}{4}n)$
16.) $r = 5 \cos(5\theta)$	Rose Curve	Polar axis	$(5, \frac{2\pi}{5}n)$
17.) $r = 3 - 3 \cos \theta$	Cardioid	Polar axis	$(-6, 0)$
18.) $r^2 = 4 \cos 2\theta$	Lemniscate	Polar axis, $\theta = \pi/2$ Pole	$(2, 0)$ $(-2, 0)$
19.) $r = 1 - 2 \sin \theta$	Loop	$\theta = \pi/2$	$(-3, \pi/2)$

Classify and graph each equation.

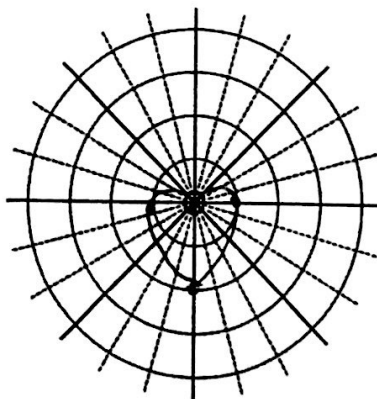
20.) $r = 1 - 3 \cos \theta$

21.) $r = 1 - \sin \theta$

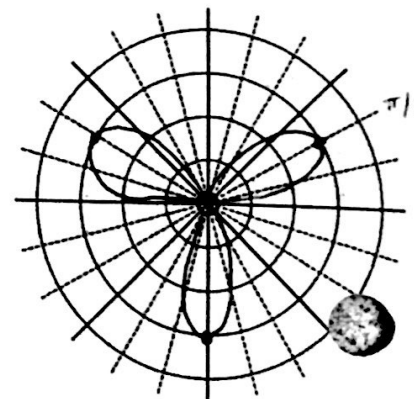
22.) $r = 3 \sin 3\theta$



Loop



Cardioid



Rose Curve.