

THIS IS A NO CALCULATOR QUIZ

[5 POINTS]

Find the equation of the directrix and the coordinates of both foci of the conic $r = \frac{8}{3-5\cos\theta}$.

Give your answers in rectangular coordinates.

$$\frac{8}{3-5\cos\theta} \cdot \frac{\frac{1}{3}}{\frac{1}{3}} = \frac{\frac{8}{3}}{1-\frac{5}{3}\cos\theta}$$

$$e = \frac{5}{3}$$

$$ep = \frac{8}{3}$$

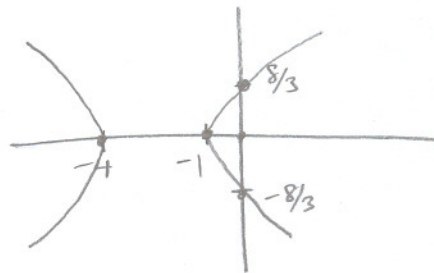
$$\frac{5}{3}p = \frac{8}{3}$$

$$5p = 8$$

$$p = \frac{8}{5}$$

VERTICAL
LEFT

θ	r
0	-4
$\pi/2$	$8/3$
π	1
$3\pi/2$	$8/3$



$$\text{CENTER} = \frac{1}{2}(-4 + -1) = -\frac{5}{2}$$

$$\text{FOCUS} = 2(-\frac{5}{2}) = -5$$

$$D: x = -\frac{8}{5}$$

$$F: (0, 0), (-5, 0)$$

[9 POINTS]

Eliminate the parameter and write the corresponding rectangular equation.

(a) $x = 2 - 5t \rightarrow t = \frac{2-x}{5}$
 $y = 3 - 2t$

$$y = 3 - 2\left(\frac{2-x}{5}\right)$$

$$y = 3 - \frac{4-2x}{5}$$

$$y = \frac{15-4+2x}{5}$$

$$y = \frac{11+2x}{5}$$

(b) $x = 2 - 5\cos t \rightarrow \cos t = \frac{2-x}{5}$
 $y = 3 - 2\sin t \rightarrow \sin t = \frac{3-y}{2}$

$$\cos^2 t + \sin^2 t = 1$$

$$\left(\frac{2-x}{5}\right)^2 + \left(\frac{3-y}{2}\right)^2 = 1$$

$$\text{OR } \left(\frac{x-2}{5}\right)^2 + \left(\frac{y-3}{2}\right)^2 = 1$$

$$\frac{(x-2)^2}{25} + \frac{(y-3)^2}{4} = 1$$

[6 POINTS]

Find a set of parametric equations for each graph.

(a) the line which passes through (4, -2) and (-1, 6)

$$x = 4 + (-1-4)t = 4-5t$$

$$y = -2 + (6-(-2))t = -2+8t$$

OR

$$x = -1 + (4-(-1))t = -1+5t$$

$$y = 6 + (-2-6)t = 6-8t$$

(b) the circle with center (-2, 4) and radius 3

$$x = -2 + 3\cos t$$

$$y = 4 + 3\sin t$$