KFUPM - PREP MATH PROGRAM - MATH002 - TERM 251

12.1 Recitation Exercises

1. Which one of the following is the equation in standard form of the parabola with directrix y = 7 and focus (1,3)

A)
$$y - 5 = -\frac{1}{8}(x - 1)^2$$

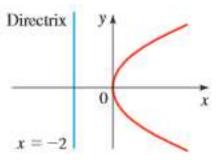
B)
$$x-5=-\frac{1}{8}(x-1)^2$$

C)
$$y - 5 = \frac{1}{8}(x - 1)^2$$

D)
$$x - 1 = \frac{1}{8}(y - 4)^2$$

E)
$$y-5=\frac{1}{4}(x-1)^2$$

2. Find an equation of the parabola from the given graph



3. Find the vertex, focus, and directrix of the parabola given by the equation:

$$3x^2 - 12x - y + 14 = 0$$

- 4. Which of the following points lies on the parabola that has vertex (2,1) and focus (2,3)
 - A) (4,2)

- B) (6,3) C) (5,3) D) (1,-3) E) (-1,3)

12.2 & 12.3 Recitation Exercises

1. Find the center, the vertices, foci, and eccentricity of the ellipse given by the equation

a)
$$3x^2 + 2y^2 - 6x + 12y = -15$$

b)
$$3y^2 + 2x^2 - 6y + 12x = -15$$

2.

- **a)** Find the equation of the ellipse that has vertices at (3,8) and (3, -2), and foci at (3,6) and (3,0).
- **b)** Find the equation in standard form, of the ellipse with foci at (-1,2) and (3,2) that passes through the point (3,5).
- **3.** Find the points of intersection of the ellipse $\frac{(x+1)^2}{16} + \frac{(y-2)^2}{9} = 1$, and the hyperbola $\frac{(x+1)^2}{16} \frac{(y-2)^2}{9} = 1$:
 - **a)** By solving the system of nonlinear equations.
 - **b)** By graphing.
- **4.** Find the equation in standard form of the hyperbola with vertices (-1,0) and (-1,-4), and eccentricity $e = \frac{\sqrt{5}}{2}$.
- **5.** Write the following equations in standard form and identify the corresponding conics

a)
$$x^2 - 4x + y^2 + 2y + 2 = 0$$
.

b)
$$2x^2 - 8x - 2y^2 - 4y = 0.$$

c)
$$27x^2 + 36y^2 + 18x + 36y - 96 = 0$$
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