QUIZ #10 @ 15 points

Write in a neat and organized fashion. You should use a pencil. For an exercise to be complete there needs to be a detailed solution to the problem. Do not just write down an answer. No proof, no credit given!

1) Graph the following circle: $x^2 + y^2 - 6y - 7 = 0$. Show all work.

$x^2 + y^2 - 6y - 7 = 0$
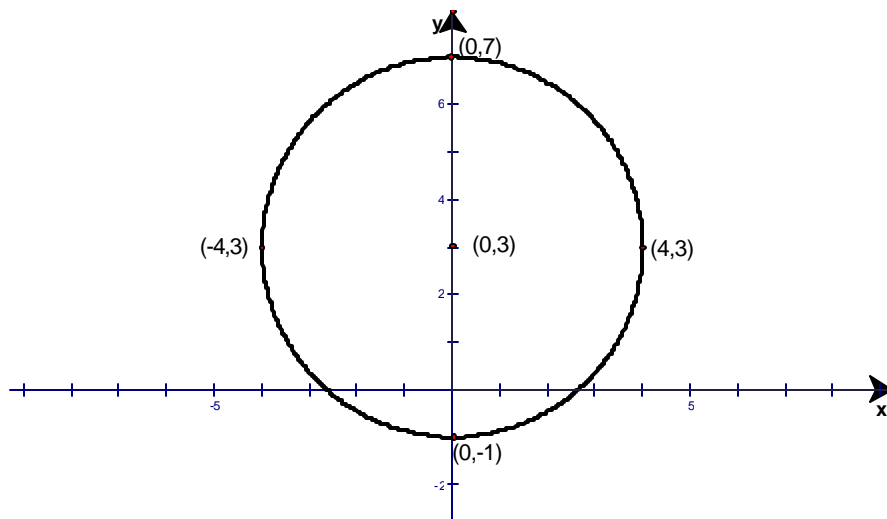Complete the square on y:
$x^2 + y^2 - 6y + 9 = 7 + 9$
$x^2 + (y - 3)^2 = 16$ standard form

Identify Center : $(0,3)$

Radius: $r = \sqrt{16} = 4$

$(0,7)$

$(-4,3)$ $(0,3)$ $(4,3)$

$(0,-1)$

2) Graph the following parabola $x = y^2 - 6y + 8$ showing the coordinates of the

$x = y^2 - 6y + 8$

Vertex: $(-1,3)$
$y_v = \dfrac{-b}{2a} = \dfrac{6}{2} = 3$
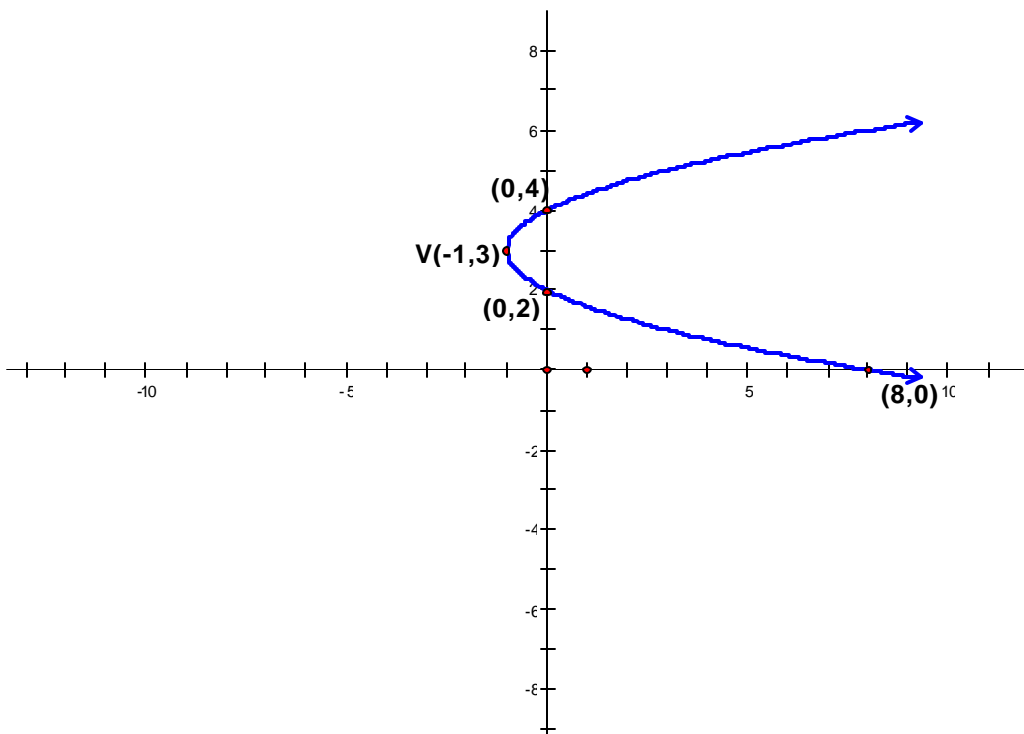$x_v = 3^2 - 6 \cdot 3 + 8 = -1$

x-intercept: $(8,0)$
$x - \cap : y = 0, x = 8$

y-intercepts : $(0,2)$ and $(0,4)$
$y - \cap : x = 0, y^2 - 6y + 8 = 0$
$(y - 4)(y - 2) = 0$
$y = 4$ or $y = 2$

$(0,4)$
$V(-1,3)$
$(0,2)$
$(8,0)$

3) Graph $4x^2 + 25y^2 = 100$. Show all work
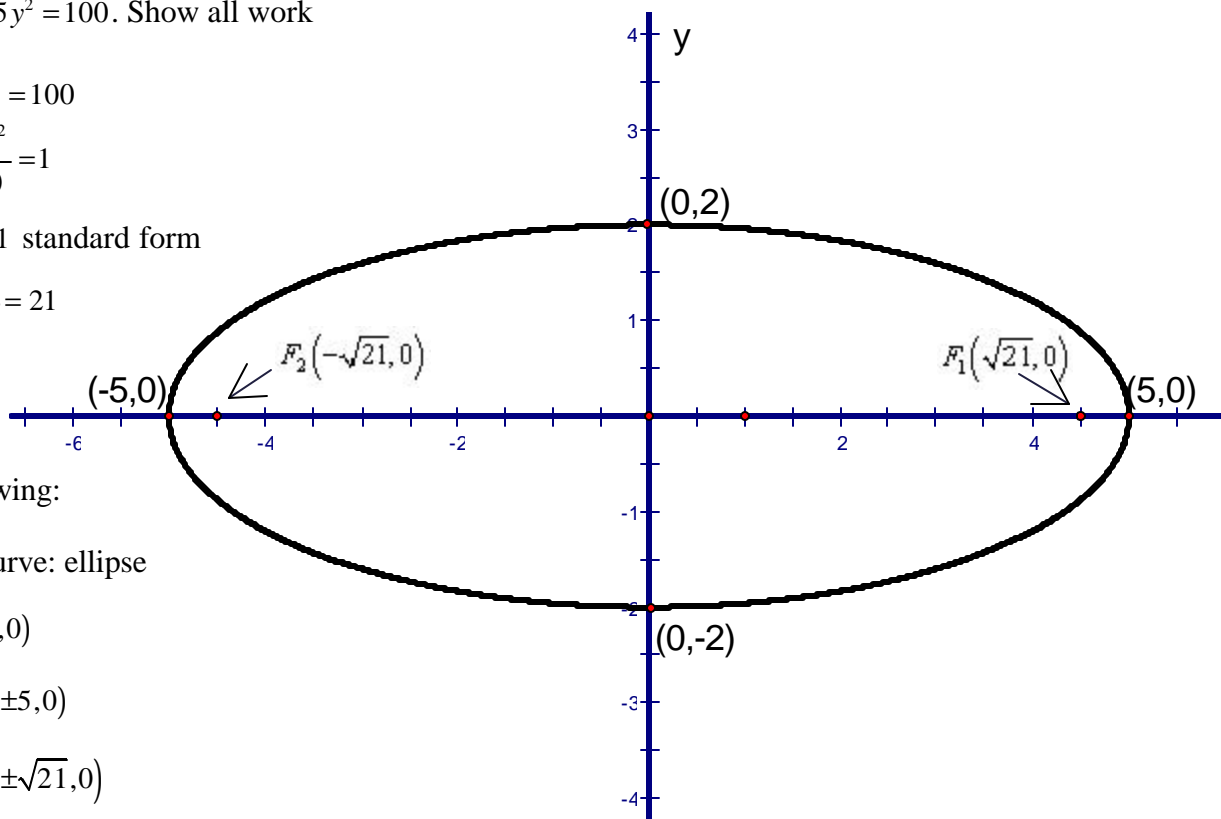
$4x^2 + 25y^2 = 100$

$\dfrac{4x^2}{100} + \dfrac{25y^2}{100} = 1$

$\dfrac{x^2}{25} + \dfrac{y^2}{4} = 1$ standard form

$c^2 = 25 - 4 = 21$

$c = \sqrt{21}$

(-5,0)

$F_2\left(-\sqrt{21}, 0\right)$

$F_1\left(\sqrt{21}, 0\right)$

(5,0)

(0,2)

(0,-2)

Identify the following:

Type of curve: ellipse

Center: $(0,0)$

Vertices: $(\pm 5, 0)$

Foci: $F\left(\pm\sqrt{21}, 0\right)$

Length of major axis: 10

Length of minor axis : 4

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4) Graph $9x^2 - 4y^2 = 36$. Show all work.

$\dfrac{9x^2}{36} - \dfrac{4y^2}{36} = 1$

$\dfrac{x^2}{4} - \dfrac{y^2}{9} = 1$ - standard form

$c^2 = 9 + 4 = 13$

$c = \sqrt{13}$

(0,3)

(0,-2)

(2,0)

(0,-3)

Identify:

Type of curve: hyperbola

Center: $(0,0)$

Vertices: $(\pm 2, 0)$

Foci: $\left(\pm\sqrt{13}, 0\right)$

Equations of the asymptotes: $y = \pm\dfrac{3}{2}x$