

① Graph the following $8x^2 + 9y^2 + 48x - 18y = -9$

Find the foci and vertices.

$$8(x^2 + 6x + 9) + 9(y^2 - 2y + 1) = 72$$

S.F. $\frac{(x+3)^2}{9} + \frac{(y-1)^2}{8} = 1$

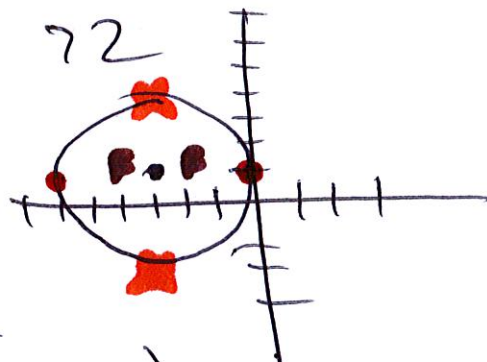
center $(-3, 1)$

major = 6
minor = $4\sqrt{2}$

$a^2 = 9$ $a = \pm 3$ $b^2 = 8$ $b = \pm 2\sqrt{2}$

vertices $(-3, 1)$ $(-6, 1)$ $(0, 1)$ $(-3, 1 \pm 2\sqrt{2})$

$a^2 - b^2 = c^2$ $c^2 = 1$ $c = \pm 1$ $e = \frac{1}{3}$



② Graph the following $4x^2 - 3y^2 - 8x + 12y = 32$

Find the vertices and write the equation of the asymptotes.

$$4(x^2 - 2x + 1) - 3(y^2 - 4y + 4) = 32 + 4 - 12$$

$$\frac{(x-1)^2}{6} - \frac{(y-2)^2}{8} = 1$$

center $(1, 2)$

vertices $(1 \pm \sqrt{6}, 2)$

covertices $(1, 2 \pm \sqrt{8})$

transverse axis = $2\sqrt{6}$

conjugate axis = $4\sqrt{2}$

Foci $a^2 + b^2 = c^2$ $c = \pm \sqrt{14}$

Foci $(1 \pm \sqrt{14}, 2)$

slope: $\pm \frac{\sqrt{8}}{\sqrt{6}} = \pm \frac{2\sqrt{3}}{3}$

$$y - 2 = \frac{2\sqrt{3}}{3}(x - 1)$$

$$y - 2 = -\frac{2\sqrt{3}}{3}(x - 1)$$

