Honors Algebra 2/Trig
9.1 Day 2 Worksheet

Name: Key

Transform the equation or inequality by completing the square. Then sketch the graph and include the center, vertices, endpoints, and foci.

1. $4x^2+36y^2+40x-288y+532=0$

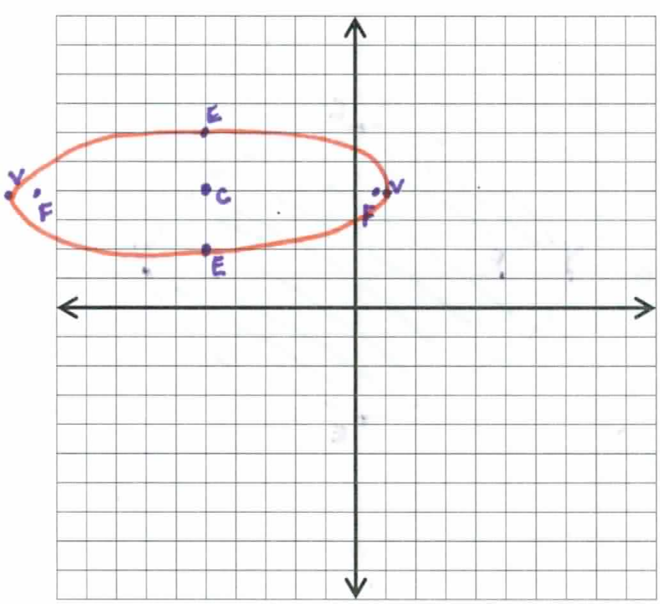
$4x^2+40x+36y^2-288y=-532$

$4(x^2+10x\ \ )+36(y^2-8y\ \ )=-532$
$+25 \qquad +16 \qquad +100 \quad +576$

$\dfrac{4(x+5)^2}{144}+\dfrac{36(y-4)^2}{144}=\dfrac{144}{144}$

$\dfrac{(x+5)^2}{36}+\dfrac{(y-4)^2}{4}=1$

center $(-5,4)$
$R_x=6 \qquad R_f=\sqrt{32}$
$R_y=2$
$V(-11,4)\ (1,4)$
$E(-5,2)\ (-5,6)$
$F(.66,4)\ (-10.66)$



2. $25x^2+4y^2-150x+32y+189=0$

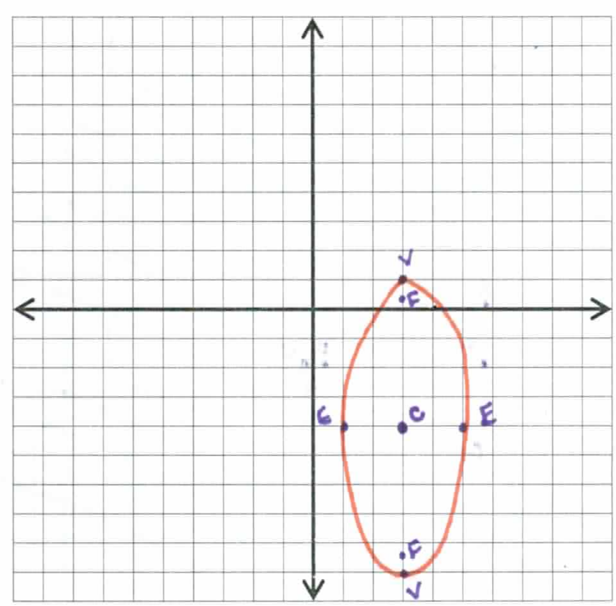
$25x^2-150x+4y^2+32y=-189$

$25(x^2-6x\ \ )+4(y^2+8y\ \ )=+225$
$+9 \qquad +16 \qquad +64$

$\dfrac{25(x-3)^2}{100}+\dfrac{4(y+4)^2}{100}=\dfrac{100}{100}$

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

center $(3,-4)$
$R_x=2 \qquad R_f=\sqrt{21}$
$R_y=5$
$V(3,1)\ (3,-9)$
$E(5,-4)\ (1,-4)$
$F(3,-8.58)\ (3,.58)$



3. $4x^2+36y^2+48x+216y+324\geq 0$

$4x^2+48x+36y^2+216y \geq -324$

$4(x^2+12x \quad) + 36(y^2+6y \quad) \geq -324$

$\quad +36 \qquad\qquad +9 \qquad +144$

$\qquad\qquad\qquad\qquad\qquad +324$

$\dfrac{4(x+6)^2}{144} + \dfrac{36(y+3)^2}{144} \geq \dfrac{144}{144}$

$\dfrac{(x+6)^2}{36} + \dfrac{(y+3)^2}{4} \geq 1$

center $(-6,-3)$

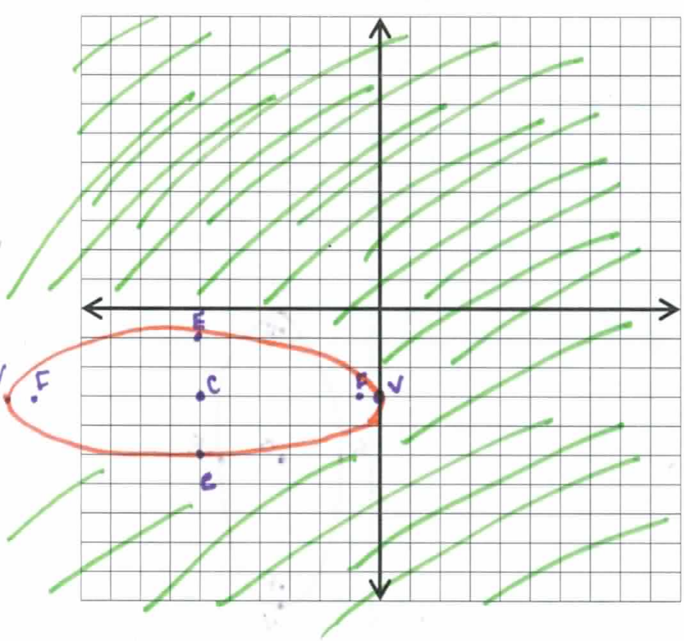
$r_x = 6 \qquad r_f = \sqrt{32}$

$r_y = 2$

V $(0,-3)(-12,-3)$

E $(-6,-1)(-6,-5)$

F $(-.34,-3)(-11.66,-3)$



4. $\dfrac{25x^2}{1225} + \dfrac{49y^2}{1225} < \dfrac{1225}{1225}$

$\dfrac{x^2}{49} + \dfrac{y^2}{25} < 1$

center $(0,0)$

$r_x = 7$

$r_y = 5$

$r_f = \sqrt{24}$

V $(7,0)(-7,0)$

E $(0,5)(0,-5)$

F $(-4.9,0)(4.9,0)$