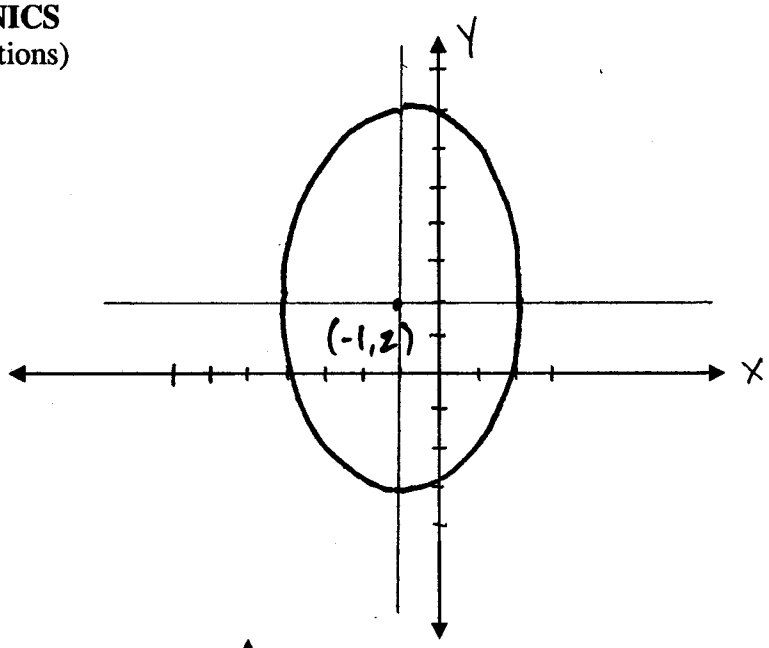
CONICS
(Solutions)

1. $25x^2 + 9y^2 + 50x - 36y - 164 = 0$

$$\downarrow$$

$$\frac{(x+1)^2}{9} + \frac{(y-2)^2}{25} = 1$$

Foci (–1, 6) (–1, –2)

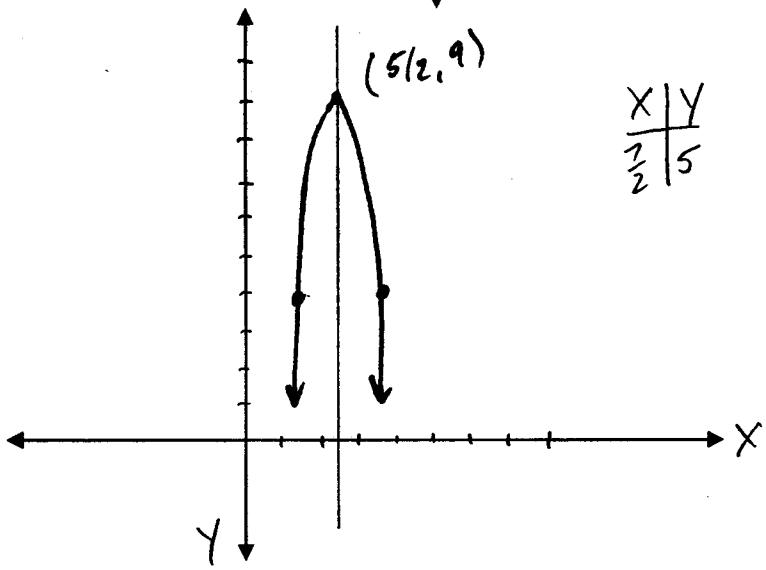


2. $y = -4x^2 + 20x - 16$

$$\downarrow$$

$$y = -4\,(x - \frac{5}{2})^2 + 9$$

Focus $(2\frac{1}{2}, 8\frac{15}{16})$



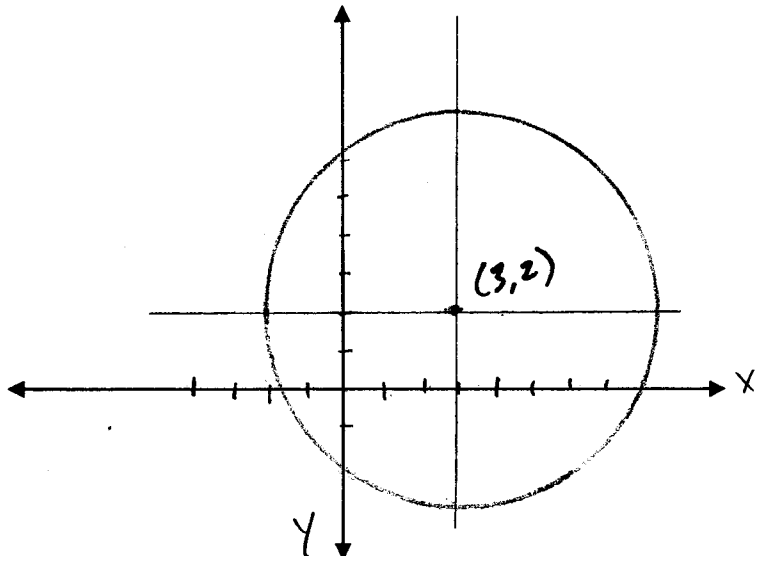
X	Y
2	5

3. $x^2 + y^2 - 6x - 4y - 12 = 0$

$$\downarrow$$

$$(x-3)^2 + (y-2)^2 = 25$$

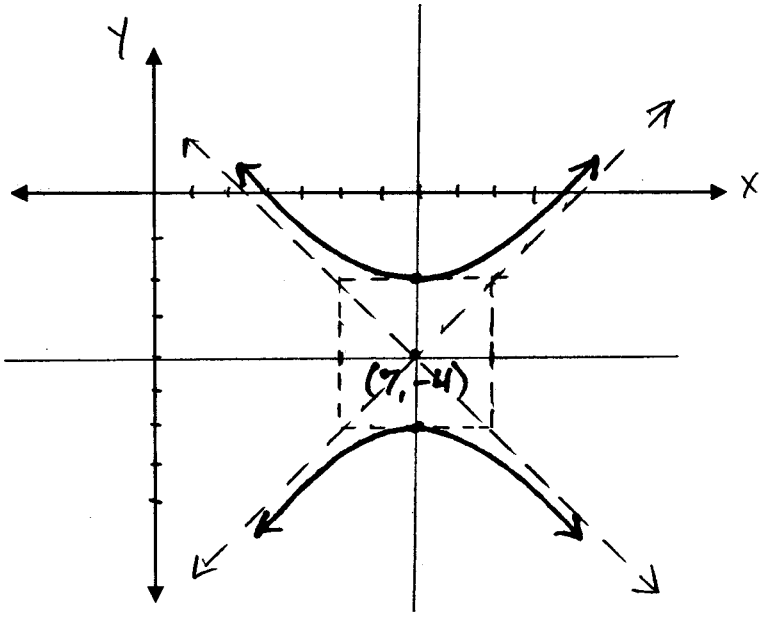
No focus/foci



4. $x^2 - y^2 - 14x - 8y + 37 = 0$

$$-\frac{(x-7)^2}{4} + \frac{(y+4)^2}{4} = 1$$

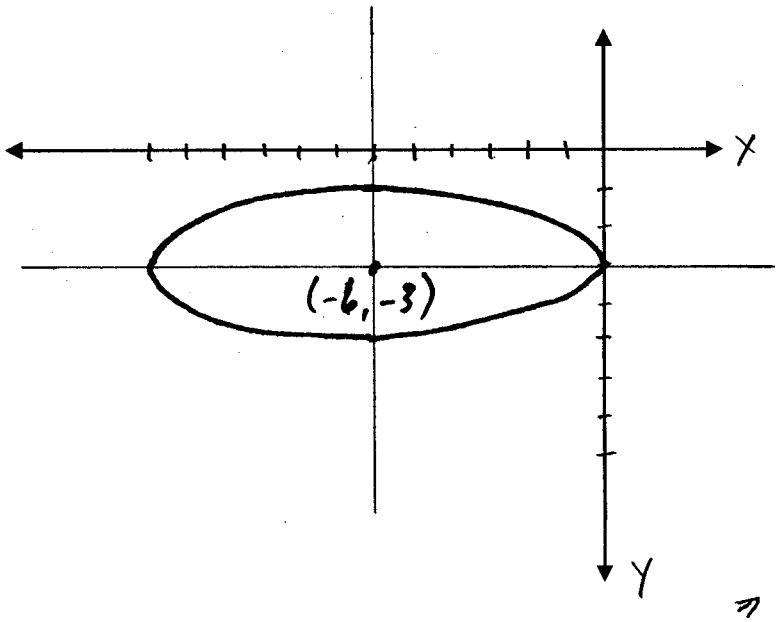
Foci $(7, -4+2\sqrt{2})$ $(7, -4-2\sqrt{2})$



5. $4x^2 + 36y^2 + 48x + 216y + 324 = 0$

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

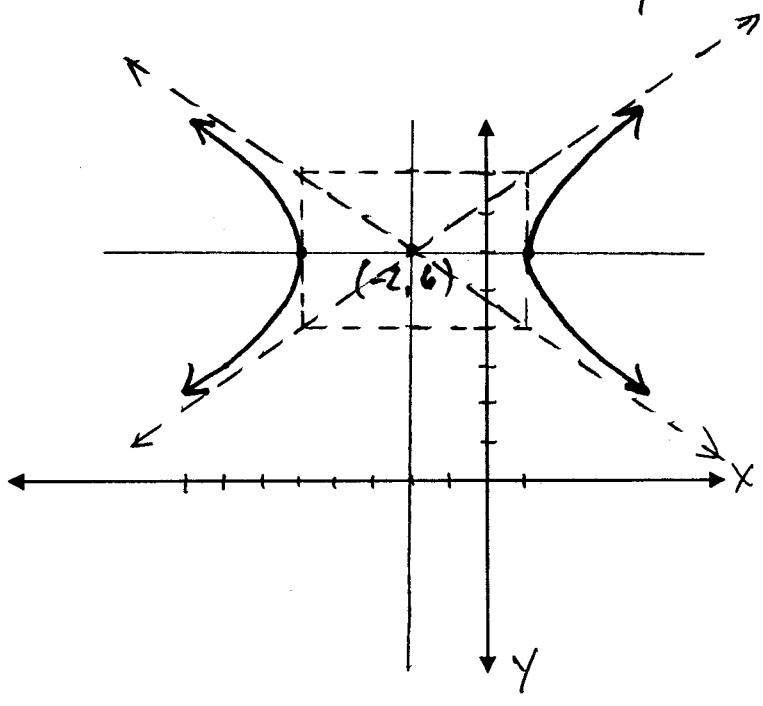
Foci $(-6-4\sqrt{2}, -3)$ $(-6+4\sqrt{2}, -3)$



6. $4x^2 - 9y^2 + 16x + 108y - 344 = 0$

$$\frac{(x+2)^2}{9} - \frac{(y-6)^2}{4} = 1$$

Foci $(-2-\sqrt{13}, 6)$ $(-2+\sqrt{13}, 6)$

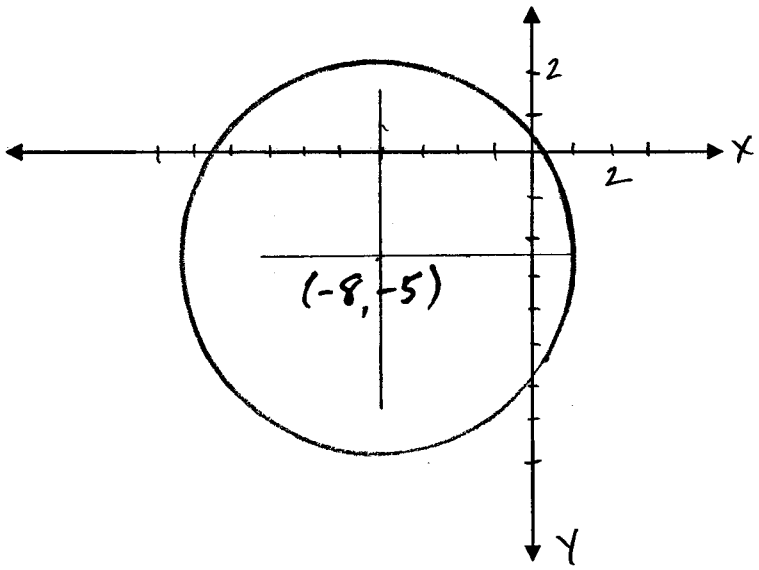


7. $x^2 + y^2 + 16x + 10y - 11 = 0$

$\downarrow$

$(x + 8)^2 + (y + 5)^2 = 100$

No focus/foci



8. $x = 2y^2 + 12y + 10$

$\downarrow$

$x = 2(y + 3)^2 - 8$

Focus $(-7\frac{7}{8}, -3)$