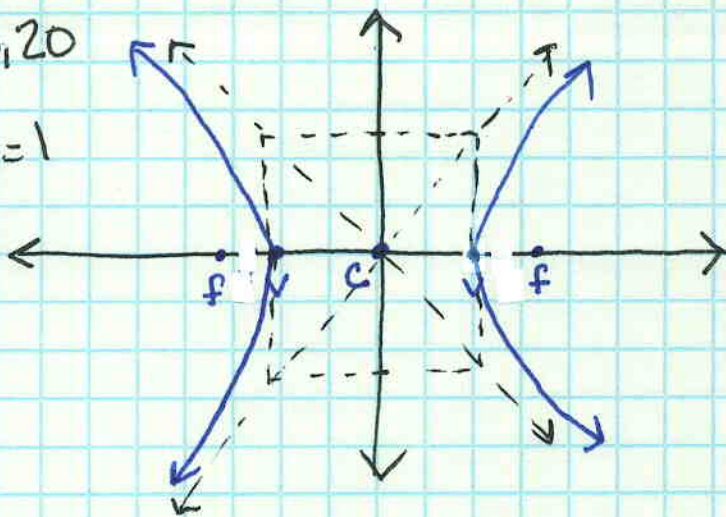


449: 9, 11, 21, 41, 453, 14, 15, 20

9.  $3x^2 - 2y^2 = 12$      $\frac{x^2}{4} - \frac{y^2}{6} = 1$

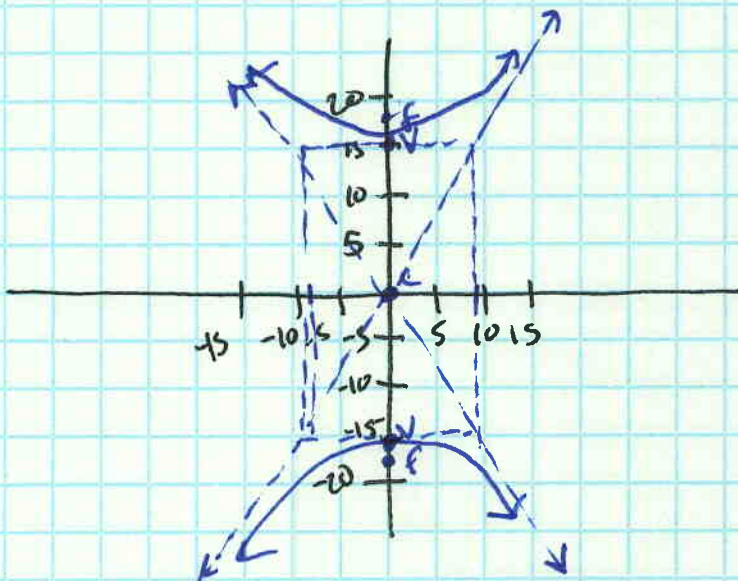
center (0, 0)     $c^2 = 4 + 6$   
 V (-2, 0) (2, 0)     $c = \sqrt{10}$   
 F (-3.2, 0) (3.2, 0)     $\sqrt{6} = 2.4$   
 asym  $y = \pm \frac{\sqrt{6}}{2} (x)$



11. Table lamp

$\frac{y^2}{225} - \frac{x^2}{81} = 1$      $c = \sqrt{306} \approx 17.5$

center (0, 0)  
 V (0, -15) (0, 15)  
 F (0, -17.5) (0, 17.5)  
 asym:  $y = \pm \frac{15}{9} x$



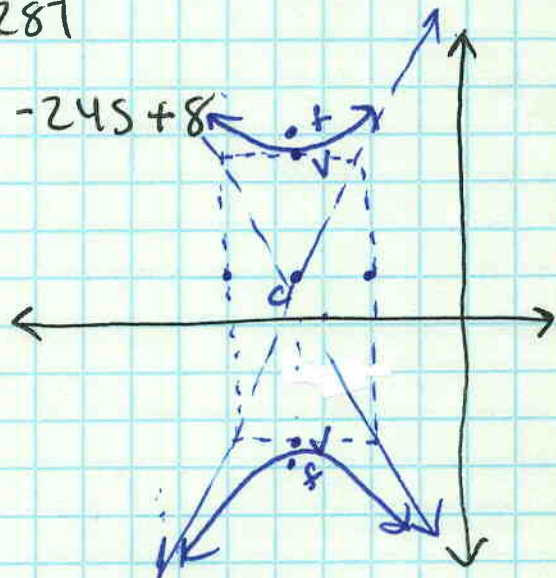
$21 - 5x^2 + 2y^2 - 70x - 8y = 287$   
 $-5x^2 - 70x + 2y^2 - 8y = 287$

$-5(x^2 + 14x + 49 - 49) + 2(y^2 - 4y + 4 - 4) = 287$   
 $-5(x+7)^2 - 49 + 2(y-2)^2 - 4 = 287$

$-5(x+7)^2 + 245 + 2(y-2)^2 - 8 = 287 - 245 + 8$

$-5(x+7)^2 + 2(y-2)^2 = 50$

$\frac{(y-2)^2}{25} - \frac{(x+7)^2}{10} = 1$      $c^2 = \sqrt{35}$   
 $c = 5.9$



center (-7, 2)  
 V (-7, 7) (-7, -3)  
 F (-7, 7.9) (-7, -3.9)

$$41. \quad 11x^2 - 2y^2 - 110x + 24y = -181$$

$$11(x^2 - 10x + 25 - 25) - 2(y^2 - 12y + 36 - 36) = -181$$

$$11((x-5)^2 - 25) - 2((y-6)^2 - 36) = -181$$

$$11(x-5)^2 - 275 - 2(y-6)^2 + 72 = -181 + 275 - 72$$

$$\frac{(x-5)^2}{2} - \frac{(y-6)^2}{11} = 1 \quad a = \sqrt{2} \quad c = \sqrt{13}$$

$$e = \frac{\sqrt{13}}{\sqrt{2}} = \underline{2.550}$$

453 14 graph  $\frac{(y-3)^2}{4} - \frac{(x-3)^2}{16} = 1$   $c^2 = 20$   
 $c = \sqrt{20}$

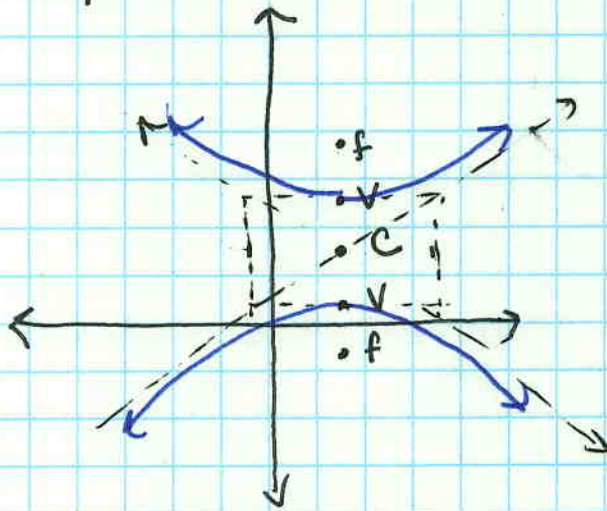
Center (3,3)

V(3,5)(3,1)

F(3,7.47)(3,-1.47)

Asym:  $y - 3 = \pm \frac{2}{4}(x - 3)$

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



15. V(0,5)(0,-5) CA = 6  
 Center (0,0)

$h=0, k=0, a=5 \quad a^2=25$

$2b=6 \quad b=3 \quad b^2=9$

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



21.  $2x^2 - y + 5 = 0 \quad A=2 \quad B=0 \quad C=0$

$D^2 = 4(2)(0) = 0$  parabola