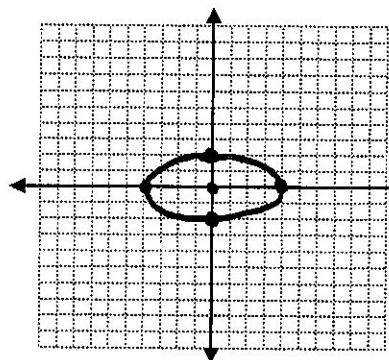


Graph the ellipse and identify the center, vertices, and foci.

1. $\frac{x^2}{16} + \frac{y^2}{4} = 1$

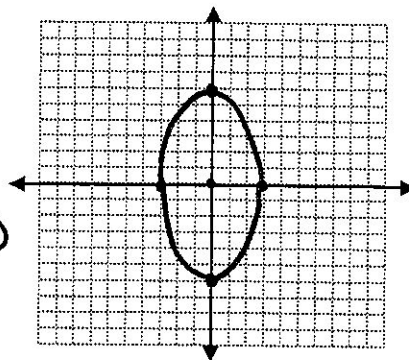
$a=4$ $b=2$
 $c^2=16-4=12$ $c=2\sqrt{3}$



Center: (0,0)
Vert: (4,0); (-4,0)
CV: (0,2); (0,-2)
Foci: (2√3,0); (-2√3,0)

2. $\frac{x^2}{9} + \frac{y^2}{36} = 1$

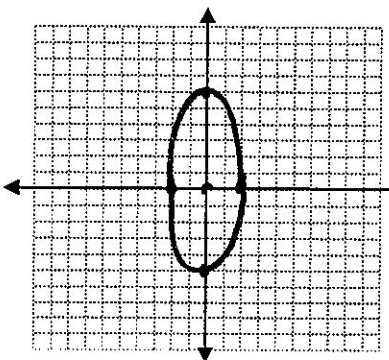
$a=6$ $b=3$
 $c^2=36-9=27$
 $c=3\sqrt{3}$



Center: (0,0)
Vert: (0,6); (0,-6)
CV: (3,0); (-3,0)
Foci: (0,3√3); (0,-3√3)

3. $25x^2 + 4y^2 = 100$

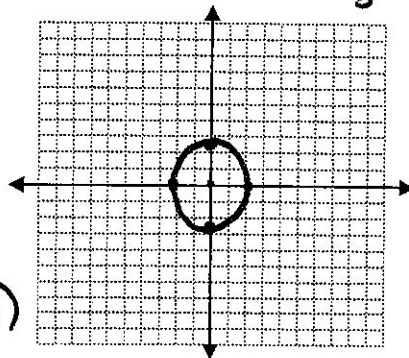
$\frac{x^2}{4} + \frac{y^2}{25} = 1$ $a=5$ $b=2$
 $c^2=25-4=21$
 $c=\pm\sqrt{21}$



Center: (0,0)
Vert: (0,5); (0,-5)
CV: (2,0); (-2,0)
Foci: (0,√21); (0,-√21)

4. $7x^2 = 35 - 5y^2$

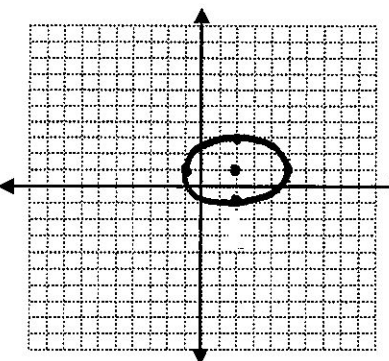
$7x^2 + 5y^2 = 35$ $a=\sqrt{7}$ $b=\sqrt{5}$
 $\frac{x^2}{5} + \frac{y^2}{7} = 1$ $c^2=7-5=2$
 $c=\pm\sqrt{2}$



Center: (0,0)
Vert: (0,√7); (0,-√7)
CV: (√5,0); (-√5,0)
Foci: (0,√2); (0,-√2)

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

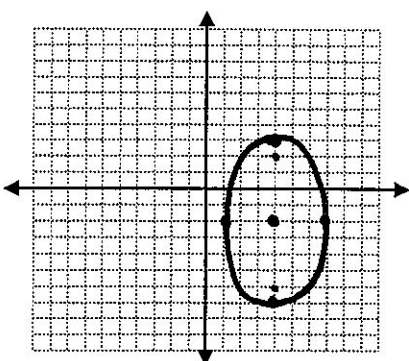
center: (2,1)
 $a=3$ $b=2$ $c=\sqrt{5}$



Center: (2,1)
Vert: (5,1); (-1,1)
CV: (2,3); (2,-1)
Foci: (2±√5, 1)

6. $\frac{(x-4)^2}{9} + \frac{(y+2)^2}{25} = 1$

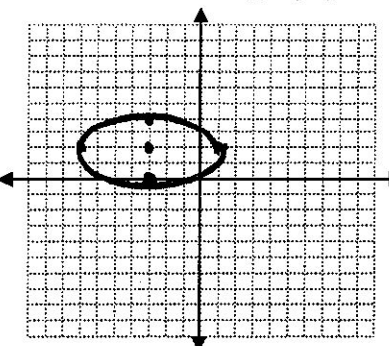
$a=5$ $b=3$ $c=4$



Center: (4,-2)
Vert: (4,3); (4,-7)
CV: (1,-2); (7,-2)
Foci: (4,2); (4,-6)

7. $(x+3)^2 + 4(y-2)^2 = 16$

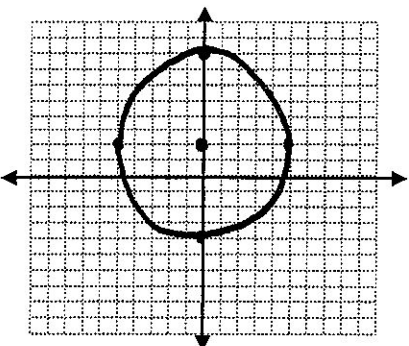
$\frac{(x+3)^2}{16} + \frac{(y-2)^2}{4} = 1$
 $a=4$ $b=2$ $c=2\sqrt{3}$



Center: (-3,2)
Vert: (1,2); (-7,2)
CV: (-3,4); (-3,0)
Foci: (-3±2√3, 2)

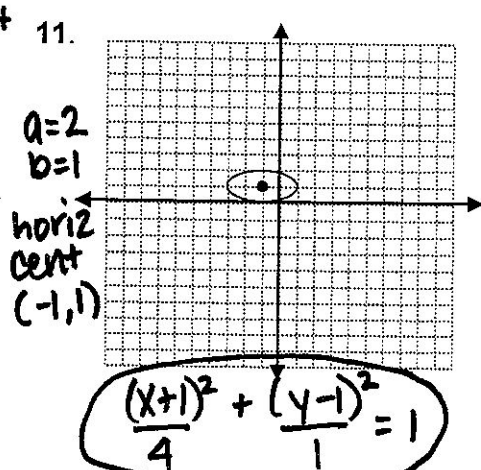
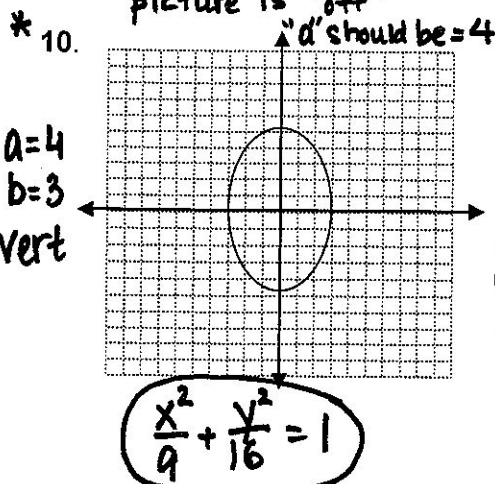
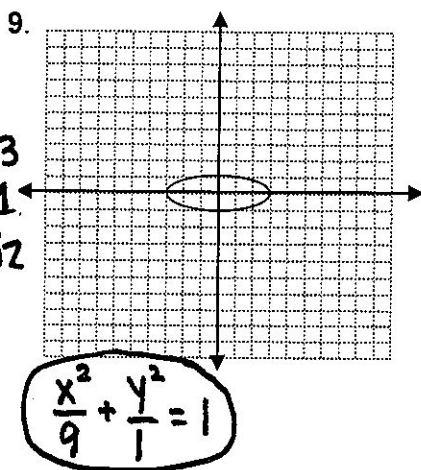
8. $\frac{x^2}{25} + \frac{(y-2)^2}{36} = 1$

$a=6$ $b=5$ $c=\sqrt{11}$

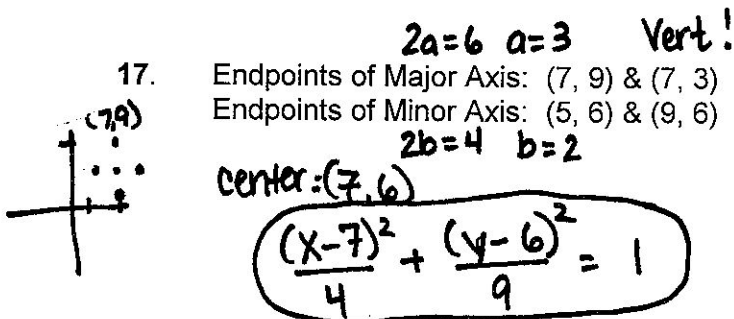
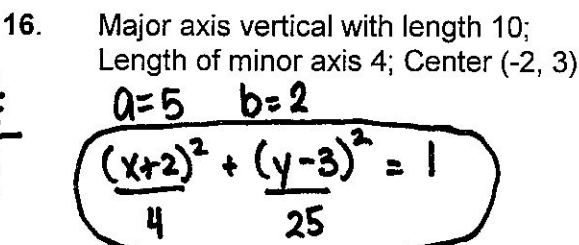
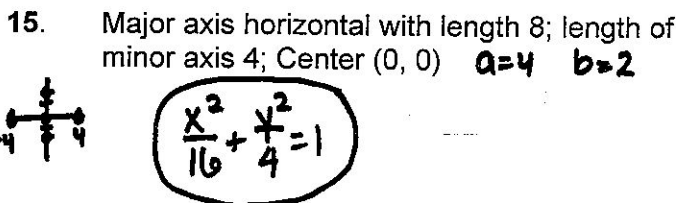
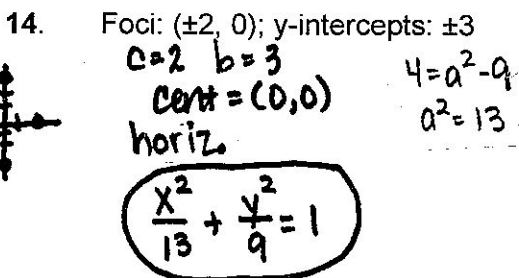
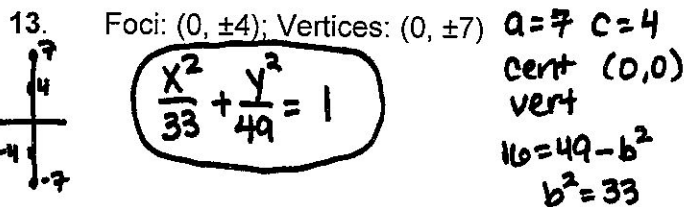
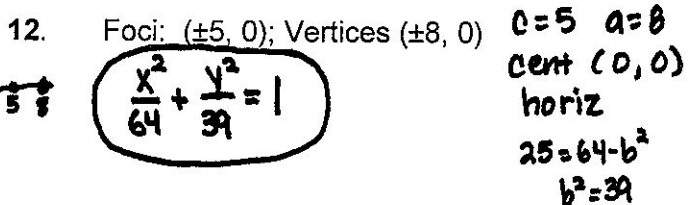


Center: (0,2)
Vert: (0,8); (0,-4)
CV: (5,2); (-5,2)
Foci: (0,2±√11)

Find the standard form of the equation of each ellipse, picture is "off"



Find the standard form of the equation of each ellipse satisfying the given conditions.



Convert each equation to standard form by completing the square.

18. $9x^2 + 25y^2 - 36x + 50y - 164 = 0$
 $9x^2 - 36x + 25y^2 + 50y = 164$
 $9(x^2 - 4x) + 25(y^2 + 2y) = 164$
 $9(x^2 - 4x + 4) + 25(y^2 + 2y + 1) = 164 + 36 + 25$
 $9(x-2)^2 + 25(y+1)^2 = 225$

The standard form equation is circled: $\frac{(x-2)^2}{25} + \frac{(y+1)^2}{9} = 1$

19. $x^2 + 4y^2 + 10x - 8y + 13 = 0$
 $x^2 + 10x + 4y^2 - 8y = -13$
 $x^2 + 10x + 25 + 4(y^2 - 2y + 1) = -13 + 25 + 4$
 $(x+5)^2 + 4(y-1)^2 = 16$

The standard form equation is circled: $\frac{(x+5)^2}{16} + \frac{(y-1)^2}{4} = 1$

20. $4x^2 + y^2 + 16x - 6y - 39 = 0$
 $4x^2 + 16x + y^2 - 6y = 39$
 $4(x^2 + 4x + 4) + y^2 - 6y + 9 = 39 + 16 + 9$
 $4(x+2)^2 + (y-3)^2 = 64$

The standard form equation is circled: $\frac{(x+2)^2}{16} + \frac{(y-3)^2}{64} = 1$

21. $4x^2 + 25y^2 - 24x + 100y + 36 = 0$
 $4x^2 - 24x + 25y^2 + 100y = -36$
 $4(x^2 - 6x + 9) + 25(y^2 + 4y + 4) = -36 + 36 + 100$
 $4(x-3)^2 + 25(y+2)^2 = 100$

The standard form equation is circled: $\frac{(x-3)^2}{25} + \frac{(y+2)^2}{4} = 1$