

Ellipses - Graphing WS

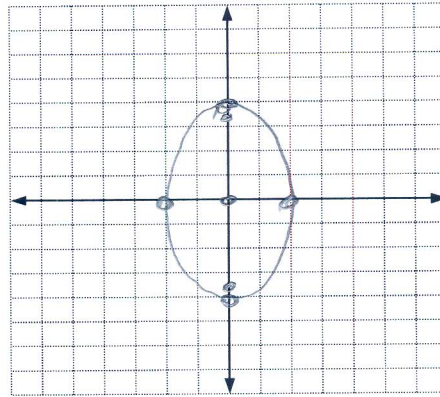
Name Fulston

Graph each ellipse. Find the center, vertices, covertices, foci, and lengths of the major and minor axes for each ellipse whose equation is given.

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

C (0, 0)
 V (0, -4) (0, 4)
 CV (-2, 0) (2, 0)
 F (0, ±2√3)
 major length = 8
 minor length = 4

a=4
 b=2
 c=±2√3

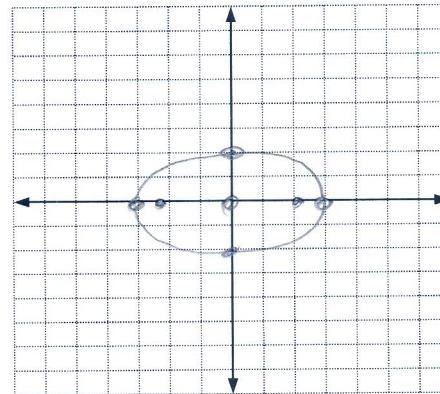


$c^2 = 16 - 4$
 $c^2 = 12$
 $c = ±\sqrt{12}$

2. $\frac{x^2}{9} + \frac{y^2}{4} = 1$

C (0, 0)
 V (-3, 0) (3, 0)
 CV (0, -2) (0, 2)
 F (±√5, 0)
 major length = 6
 minor length = 4

a=3
 b=2
 c=±√5

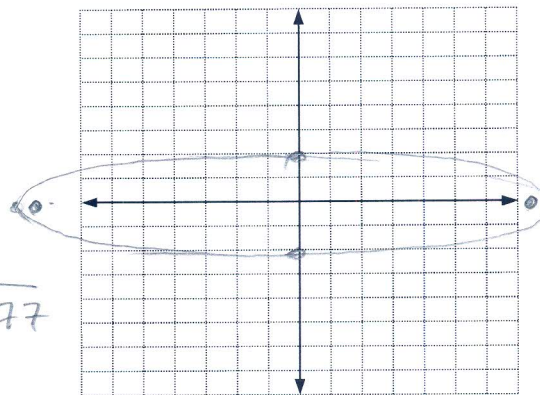


$c^2 = 9 - 4$
 $c^2 = 5$

3. $4x^2 + 81y^2 = 324$
 (hint: Divide the equation by 324.)

C (0, 0)
 V (-9, 0) (9, 0)
 CV (0, -2) (0, 2)
 F (±√77, 0)
 major length = 18
 minor length = 8

a=9
 b=4
 c=±√77



$\frac{4x^2}{324} + \frac{81y^2}{324} = \frac{324}{324}$
 $\frac{x^2}{81} + \frac{y^2}{4} = 1$
 $c^2 = 81 - 4$
 $c^2 = 77$

$$4. \frac{(x-2)^2}{4} + \frac{(y+3)^2}{9} = 1$$

C (2, -3)

V (2, -6) (2, 0)

CV (0, -3) (4, -3)

F (2, -3 ± √5)

major length = 6

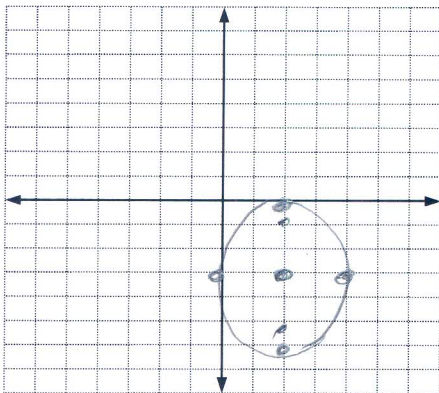
minor length = 4

a = 3

b = 2

c² = 5

c = √5



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

C (-2, 4)

V (-4, 4) (0, 4)

CV (-2, 3) (-2, 5)

F (-2 ± √3, 4)

major length = 4

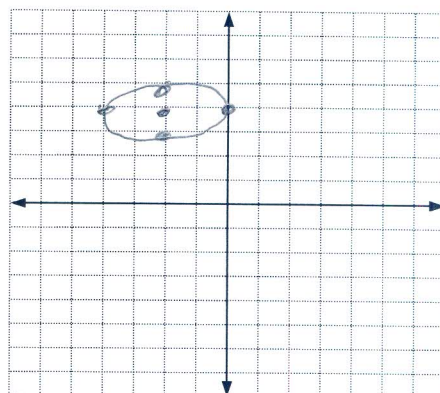
minor length = 2

a = 2

b = 1

c² = 3

c = √3



$$5. \frac{(x+4)^2}{25} + \frac{y^2}{16} = 1$$

C (-4, 0)

V (-9, 0) (1, 0)

CV (-4, -4) (-4, 4)

F (-7, 0) (-1, 0)

major length = 10

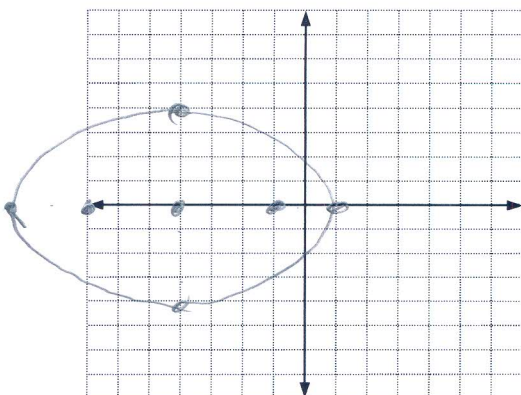
minor length = 8

a = 5

b = 4

c² = 9

c = 3



$$7. \frac{(x-3)^2}{25} + \frac{(y+3)^2}{36} = 1$$

C (3, -3)

V (-2, -3) (8, -3)

CV (3, -3) (3, 3)

F (3, -3 ± √11)

major length = 12

minor length = 10

a = 6

b = 5

c = √11

