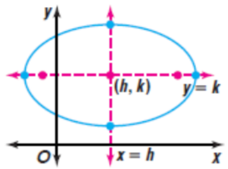
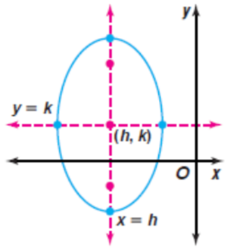
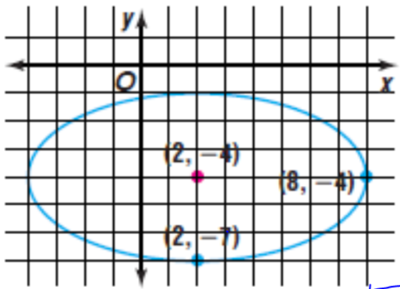
Standard Form of the Equation of an Ellipse	Orientation	Description
$\frac{(x-h)^2}{a^2}+\frac{(y-k)^2}{b^2}=1$, where $c^2=a^2-b^2$		Center: (h, k) Foci: $(h \pm c, k)$ Major axis: $y = k$ Major axis vertices: $(h \pm a, k)$ Minor axis: $x = h$ Minor axis vertices: $(h, k \pm b)$
$\frac{(y-k)^2}{a^2}+\frac{(x-h)^2}{b^2}=1$, where $c^2=a^2-b^2$		Center: (h, k) Foci: $(h, k \pm c)$ Major axis: $x = h$ Major axis vertices: $(h, k \pm a)$ Minor axis: $y = k$ Minor axis vertices: $(h \pm b, k)$



$h = 2$
$k = -4$
$a = 6$
$b = 3$
$c =$

$$\frac{(x-h)^2}{a^2}+\frac{(y-k)^2}{b^2}=1$$

a. $$\boxed{\frac{(x-2)^2}{36}+\frac{(y+4)^2}{9}=1}$$

b. foci

$h=2$
$k=-4$

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

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

OR

$(2\pm3\sqrt{3}, -4)$

$$\frac{(y-3)^2}{25} + \frac{(x+4)^2}{9} = 1,$$

$25 = a^2$ $9 = b^2$

$h = -4$
$k = 3$
$a = 5$
$b = 3$
$c = 4$

center $(-4, 3)$

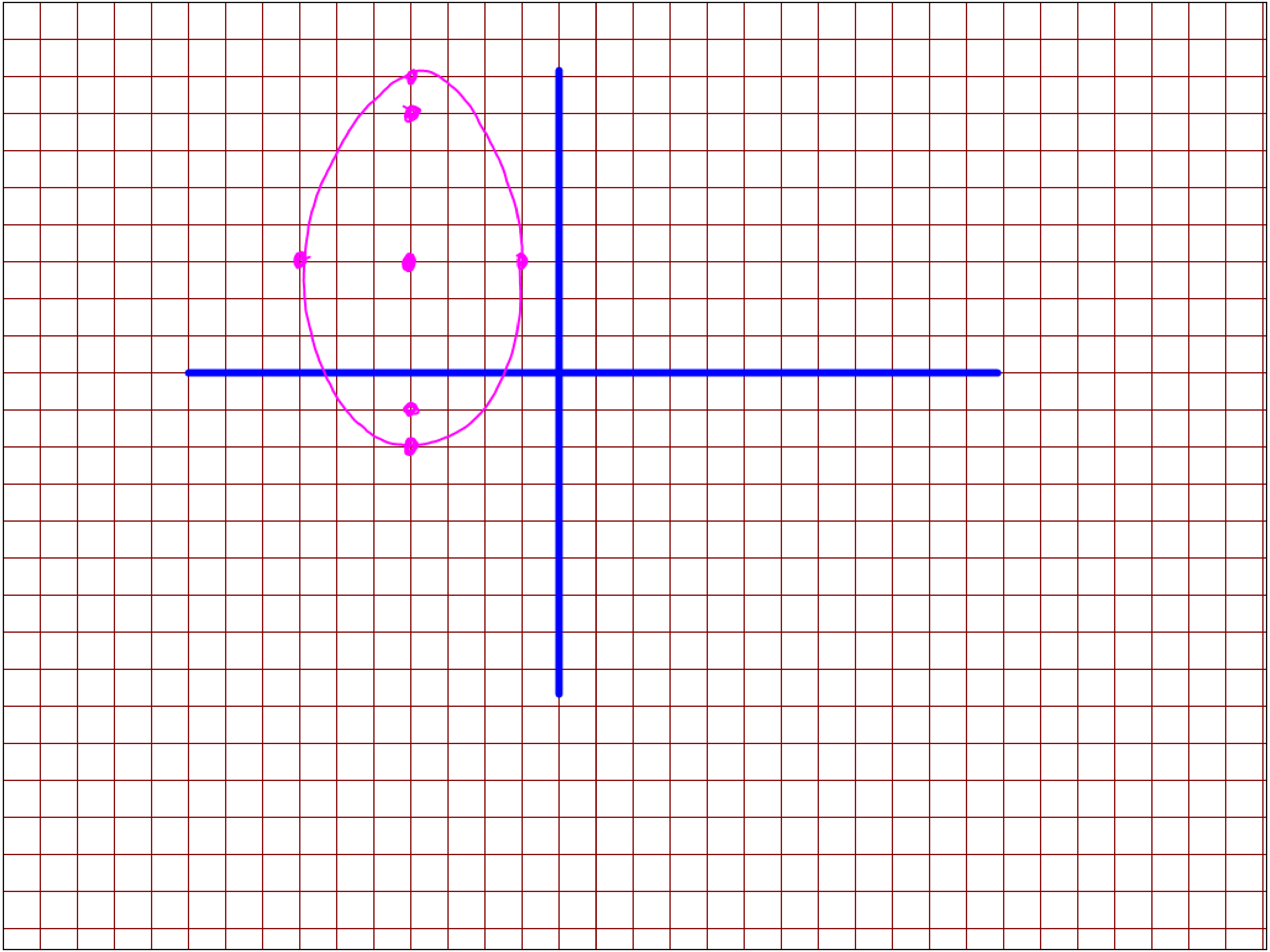
vertices → major $(h, k \pm a)$ $(-4, 8)$ $(-4, -2)$

→ minor $(-1, 3)$ $(-7, 3)$

→ $(h \pm b, k)$

foci $(h, k \pm c)$ $(-4, 7)$ $(-4, -1)$

$c^2 = a^2 - b^2$
$c^2 = 25 - 9$
$c^2 = 16$



$$4x^2 + 9y^2 - 40x + 36y + 100 = 0.$$

$$4x^2 - 40x + 9y^2 + 36y = -100$$

$$4(x^2 - 10x + \underline{25}) + 9(y^2 + 4y + \underline{4}) = -100 + 4(25) + 9(4)$$

$$\frac{\cancel{4}^{1}(x-5)^2}{\cancel{36}_{9}} + \frac{\cancel{9}^{1}(y+2)^2}{\cancel{36}_{4}} = \frac{36}{36}$$

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

p. 638-641

17, 18, 19-23 odd, 27,
31, 33-35, 38, 49, 52, 63