Bellwork Alg 2B Wednesday, November 29, 2017

1. Given the Ellipse: $4(x-3)^2+(y+7)^2=1$. Find the coordinates of the following:

Vertices: Co-Vertices: Foci:

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2. Given a Co-Vertex at $(20,45)$ and a Focus at $(23,52)$, write the two possible equations of this ellipse.

3. If x and y are integers, and $3x+2y=13$, which of the following could be the value of y ?

A. 0 B. 1 C. 2 D. 3 E. 4

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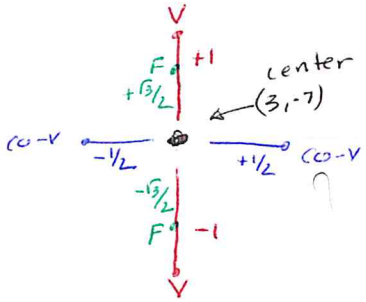
Answers

1. Given the Ellipse: $4(x-3)^2+(y+7)^2=1$. Find the coordinates of the following:

Vertices: $(3,-6)$ & $(3,-8)$ Co-Vertices: $(5/2,-7)$ & $(7/2,-7)$ Foci: $(3,-7\pm\sqrt{3}/2)$

$$4(x-3)^2+(y+7)^2=1$$

$$\frac{(x-3)^2}{1/4}+\frac{(y+7)^2}{1}=1$$



center $(3,-7)$

major axis is Vertical

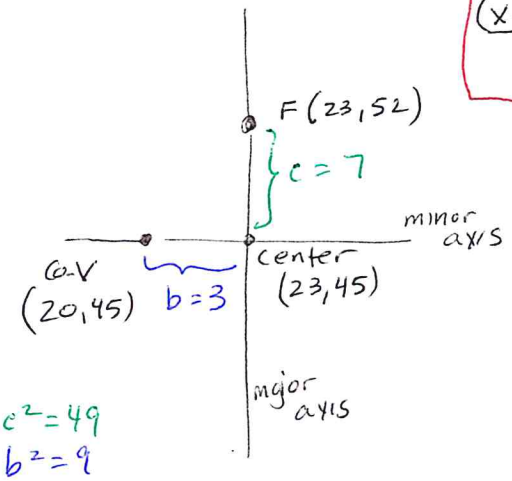
$a^2=1 \rightarrow a=\pm 1$

$b^2=1/4 \rightarrow b=\pm 1/2$

$c^2=1-1/4=3/4 \quad c=\pm\sqrt{3}/2$

2. Given a Co-Vertex at $(20,45)$ and a Focus at $(23,52)$, write the two possible equations of this ellipse.

1ST Possibility



$c^2=49$

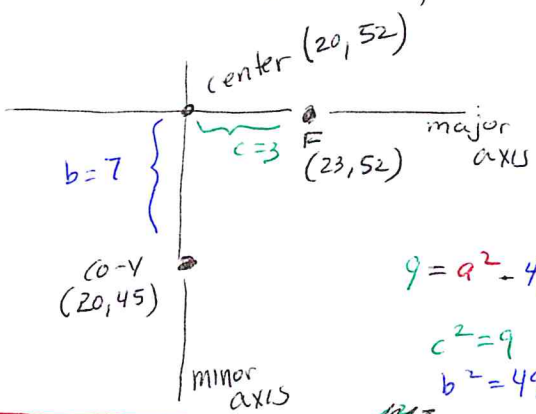
$b^2=9$

$49=a^2-9$

$a^2=58$

$$\frac{(x-23)^2}{9}+\frac{(y-45)^2}{58}=1$$

2nd Possibility



$9=a^2-49$

$c^2=9$

$b^2=49$

$a^2=58$

$$\frac{(x-20)^2}{58}+\frac{(y-52)^2}{49}=1$$

3. If x and y are integers, and $3x+2y=13$, which of the following could be the value of y?

A. 0 B. 1 C. 2 D. 3 E. 4

$3x+2y=13$

$x=\frac{13-2y}{3}$ Now replace y with the above choices & find the value that makes x an integer

✗ A. 0 → $x=\frac{13-2(0)}{3}=13/3$ NOT an integer

✗ B. 1 → $x=\frac{13-2(1)}{3}=11/3$ NOT an integer

✓ C. 2 → $x=\frac{13-2(2)}{2}=9/3=3$ This is an integer