Answer on Question #57272 – Math – Analytic Geometry

Question

1. What are the coordinates of the center of the ellipse shown below?

$$\frac{(x-1)^2}{9}+\frac{(y+5)^2}{16}=1$$

A: $(5;\ -1)$

B: $(1;\ -5)$

C: $(3; 4)$

D: $(-3;\ -4)$

Solution

The equation of an ellipse is

$$\frac{(x-x_0)^2}{a^2}+\frac{(y-y_0)^2}{b^2}=1,$$

where $(x_0; y_0)$ is the coordinates of the center, a is the semi-major axis and b is the semi-minor axis $(a > b)$.

So, $(1;\ -5)$ is the center of the ellipse.

Answer: B. $(1;\ -5)$.

Question

2. What is the length of the major axis of the ellipse shown below?

$$\frac{(x-1)^2}{9}+\frac{(y+5)^2}{16}=1$$

A: 4

B: 8

C: 32

D: 16

Solution

The equation of an ellipse is

$$\frac{(x-x_0)^2}{a^2}+\frac{(y-y_0)^2}{b^2}=1,$$

where $(x_0; y_0)$ is the center.

So, in this case $a\ =\ 3$ and $b = 4$. Therefore, the length of the semi-major axis is 4

(because $4 > 3$) and the length of the major axis is $2b = 2 \cdot 4 = 8$.

Answer: B. 8.