

How long is the minor axis for the ellipse shown below?

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

Solution. For ellipse

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

the minor axis is $2b$. Then for ellipse

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

the minor axis is $2 \cdot 4 = 8$.

Answer: the minor axis is 8. (A)

Which of the following correctly represents the coordinates of the foci of the ellipse shown below?

$$\frac{(x - 7)^2}{4} + \frac{(y + 3)^2}{16} = 1.$$

Solution. Let the question of the ellipse

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

where $b \geq a$. The coordinates of the foci of this ellipse are

$$(x_0, y_0 \pm c),$$

$$\text{where } c = \sqrt{b^2 - a^2}.$$

For the ellipse

$$\frac{(x - 7)^2}{4} + \frac{(y + 3)^2}{16} = 1$$

$$c = \sqrt{16 - 4} = \sqrt{12} = 2\sqrt{3}.$$

The coordinates of the foci of this ellipse are

$$(7, -3 \pm 2\sqrt{3}).$$

Answer: the coordinates of the foci of the ellipse $(7, -3 \pm 2\sqrt{3})$. (C)