Step-1

Equation of given ellipse is $\dfrac{x^2}{a^2}+\dfrac{y^2}{b^2}=1$.

We can written this equation as $\lambda_1 x^2+\lambda_2 y^2=1$.

Compare these two equations,

So, $\lambda_1=\dfrac{1}{a^2},\lambda_2=\dfrac{1}{b^2}$

$$\Rightarrow a=\dfrac{1}{\sqrt{\lambda_1}},b=\dfrac{1}{\sqrt{\lambda_2}}$$

Thus half lengths of axes are $\boxed{a=\dfrac{1}{\sqrt{\lambda_1}},b=\dfrac{1}{\sqrt{\lambda_2}}}$.

Step-2

Given ellipse equation is $9x^2+16y^2=1$.

$$\Rightarrow \dfrac{x^2}{\left(\dfrac{1}{3}\right)^2}+\dfrac{y^2}{\left(\dfrac{1}{4}\right)^2}=1$$

$$\Rightarrow a=\dfrac{1}{3},\ b=\dfrac{1}{4}.$$

Thus half lengths of axes are $\boxed{a=\dfrac{1}{3},\ b=\dfrac{1}{4}}$.