We can substitute $x = a \sin \varphi$, $dx = a \cos \varphi \, d\varphi$ and get

$$\text{perimeter} = 4 \int_0^{\frac{\pi}{2}} a \sqrt{1 - (1 - \frac{b^2}{a^2}) \sin^2 \varphi} \, d\varphi$$

but unless $b = a$, none of these integrals can be eval'd analytically in terms of the usual Calc-2 functions.