7. $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

$\frac{y^2}{b^2} = \frac{a^2 - x^2}{a^2}$

$\frac{y}{b} = \frac{1}{a}\sqrt{a^2 - x^2}$

$y = \frac{b}{a}\sqrt{a^2 - x^2}$

$A = \int^a \frac{b}{a}\sqrt{a^2 - x^2}\,dx$

$A = \frac{b}{a}\int^a \sqrt{a^2 - x^2}\,dx$

$\frac{b}{2} \times \frac{1}{2}\left[x\sqrt{a^2 - x^2} + a^2 \sin^{-1}\frac{x}{a}\right]_0^a$

$A = \frac{b}{2a}\left[a^2 \times \frac{\pi}{2}\right]$

$A = \frac{ba^2}{2a^2} \times \frac{\pi}{2}$

$A = \frac{\pi}{4} ab$

$= 4 \times \frac{\pi}{4} ab = \pi ab$