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$$K(k) = \int_0^{\frac{\pi}{2}} \frac{d\theta}{\sqrt{1 - k^2 \sin^2(\theta)}} = \int_0^1 \frac{dx}{\sqrt{1 - k^2 x^2} \sqrt{1 - x^2}}$$

$$E(k) = \int_0^{\frac{\pi}{2}} \sqrt{1 - k^2 \sin^2(\theta)} d\theta = \int_0^1 \frac{\sqrt{1 - k^2 x^2}}{\sqrt{1 - x^2}} dx$$

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