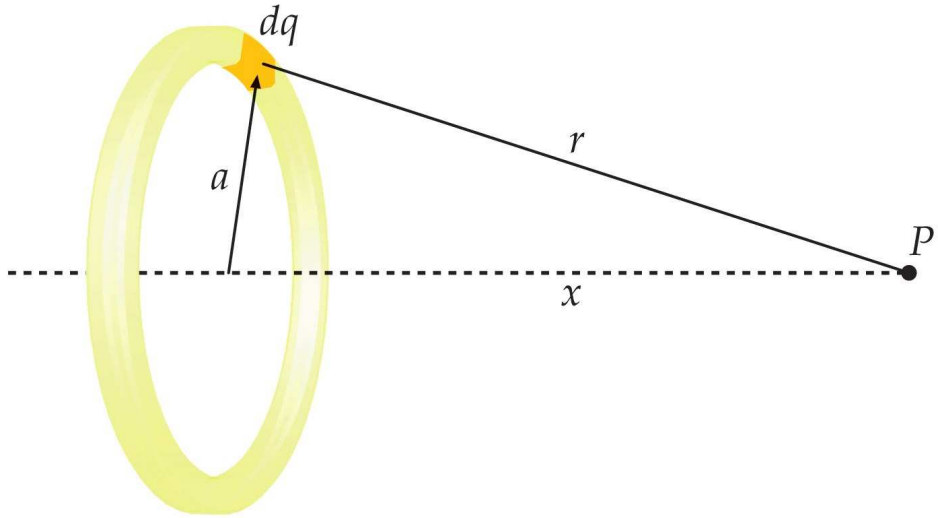
Electric Potential of Charged Ring

- Total charge on ring: Q
- Charge per unit length: $\lambda = Q/2\pi a$
- Charge on arc: dq



Find the electric potential at point P on the axis of the ring.

- $dV = k\,\dfrac{dq}{r} = \dfrac{k\,dq}{\sqrt{x^2 + a^2}}$
- $V(x) = k \displaystyle\int \frac{dq}{\sqrt{x^2 + a^2}} = \frac{k}{\sqrt{x^2 + a^2}} \int dq = \frac{kQ}{\sqrt{x^2 + a^2}}$