

$$V_{rms} = \sqrt{\frac{1}{T} \int_0^T v^2(t) dt}$$

$$\text{but } v(t) = \begin{cases} A, & 0 \leq t < 1 \\ 0, & 1 \leq t < 2 \end{cases} \text{ with } T = 2$$

$$V_{rms} = \sqrt{\frac{1}{2} \left[ \int_0^1 A^2 dt + \int_1^2 0^2 dt \right]}$$

$$= \sqrt{\frac{1}{2} A^2 \int_0^1 dt}$$

$$= \sqrt{\frac{1}{2} A^2}$$

$$= \boxed{\frac{A}{\sqrt{2}} V_{rms}}$$