

$$\mathcal{E} = - \frac{d\Phi}{dt} = - \frac{d(BA)}{dt} = -B \frac{dA}{dt} = -B \frac{d(\pi r^2)}{dt} = -2\pi B \frac{dr}{dt}$$

$$\mathcal{E} = -2\pi (.12\text{m})(.8\text{T})(-.75\text{m/s}) = .452\text{V}$$

~~25~~ 27

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$$d\Phi = B dA = (4t^2y)(l dy)$$

$$\Phi = \int_0^l [4t^2y] l dy = 2t^2 l^3$$

$$\mathcal{E} = -\frac{d\Phi}{dt} = -4t l^3 = 8 \times 10^{-5} \text{ V}$$

b) Clockwise

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$$\mathcal{E}_{\text{ave}} = -\frac{d\Phi}{dt} = -\frac{BA_i}{\tau} = \frac{(2T)(.2m)^2}{.25} = .4V$$

$$I_{\text{ave}} = \frac{\mathcal{E}_{\text{avg}}}{R} = 20A$$