

HW#19

$$\frac{P(t)}{P_0} = At^{-a}$$

w/ t = time after shutdown in s

$$1) E = P_0 \int_{t_1}^{t_2} At^{-a} dt = P_0 A \left[\frac{t^{-a+1}}{-a+1} \right]_{t_1}^{t_2}$$

$$E = \frac{P_0 A}{a-1} (t_1^{1-a} - t_2^{1-a}) \quad \text{w/} \quad \begin{cases} A=0.0603, a=0.0639 & 0 \leq t < 10 \text{ s} \\ A=0.0766, a=0.1210 & 10 \leq t < 150 \text{ s} \\ A=0.1300, a=0.2830 & 150 \leq t < 466 \text{ s} \end{cases}$$

$$2) \begin{aligned} \text{from } 0 \leq t < 10 \text{ s}, E &= 2834.95 \text{ MJ} \\ \text{from } 10 \leq t < 150 \text{ s}, E &= 16,925.78 \text{ MJ} \\ \text{from } 150 \leq t < 466 \text{ s}, E &= 1,864,000.29 \text{ MJ} \end{aligned}$$

$$E(1 \text{ day}) = 1,883,761.01 \text{ MJ}$$