I pledge to follow the Rules on Academic Honesty and understand that violations may lead to severe penalties. (Signature) _____

4) $P_Y(y) = P_X\left(\frac{-\sqrt[3]{y}}{8} \leq x \leq \frac{\sqrt[3]{y}}{8}\right)$

$$= \int_{-\sqrt[3]{y}}^{\sqrt[3]{y}} \lambda e^{-\lambda x}\, dx$$

$$= \left[-e^{-\lambda x}\right]_{-\sqrt[3]{y}}^{\sqrt[3]{y}}$$

$$= e^{-\sqrt[3]{y}\lambda}\left(e^{(2)(\sqrt[3]{y})(\lambda)} - 1\right)$$

$$P_Y(y) = \begin{cases} e^{-\sqrt[3]{y}\lambda}\left(e^{(2)(\sqrt[3]{y})(\lambda)} - 1\right), & y \geq 8x^3 \geq 0 \\ 0, & 0 \end{cases}$$