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Q4 (b)

$$= M_{X_{n-1}}\left(\tfrac{1}{2}t\right)\left\{\frac{\lambda - \frac{1}{2}t}{\lambda - t}\right\}$$

$$= M_{X_{n-2}}\left(\tfrac{1}{4}t\right)\left\{\frac{\lambda - \frac{1}{4}t}{\lambda - t}\right\}$$

$$\vdots$$

approach zero

$$= M_{X_{n-1}}\left(\frac{1}{2^{n-1}}t\right)\left\{\frac{\lambda - \frac{1}{2^{n-1}}t}{\lambda - t}\right\}$$

as $n \to \infty$ then

M_{X_n} MGF approaches

$$M_{X_1}(0)\left\{\frac{\lambda - 0t}{\lambda - t}\right\}$$

$$= \boxed{\frac{\lambda}{\lambda - t}}$$

It approaches the exponential distribution