(8d)

$$\lim_{x \to 1} \frac{x^{\frac{1}{6}} - 1}{x^{\frac{1}{3}} - 1}$$

$t = x^{\frac{1}{6}}$ $\quad x \to 1$

$t^2 = x^{\frac{1}{3}}$ $\quad t \to 1$

$$\lim_{t \to 1} \frac{t-1}{t^2-1}$$

$$= \lim_{t \to 1} \frac{t-1}{(t-1)(t+1)}$$

$$= \lim_{t \to 1} \frac{1}{t+1}$$

$$= \frac{1}{2}$$