

S. 45 A13

$$b) y = e^x \sqrt{\frac{ax+1}{bx^3}} \Rightarrow \ln y = x + \frac{1}{2} \ln \frac{ax+1}{bx^3}$$

$$\Rightarrow \ln y = x + \frac{1}{2} [\ln(ax+1) - \ln(bx^3)]$$

$$\Rightarrow \ln y = x + \frac{1}{2} [\ln(ax+1) - \ln b - 3 \ln x] \quad \left| \frac{d}{dx} \right.$$

$$\Rightarrow \frac{1}{y} \cdot y' = 1 + \frac{1 \cdot a}{2(ax+1)} - \frac{3}{2x}$$

$$\Rightarrow y' = e^x \sqrt{\frac{ax+1}{bx^3}} \cdot \frac{2x(ax+1) + ax - 3(ax+1)}{2x(ax+1)} =$$

$$= e^x \sqrt{\frac{ax+1}{bx^3}} \cdot \frac{2ax^2 + 2x + ax - 3ax - 3}{2x(ax+1)} =$$

$$= e^x \sqrt{\frac{ax+1}{bx^3}} \cdot \frac{2ax^2 + 2x(1-a) - 3}{2x(ax+1)} =$$

$$= \frac{e^x}{\sqrt{bx^3}} \sqrt{ax+1} \cdot \frac{2ax^2 + 2x(1-a) - 3}{2x(ax+1)} =$$

$$= \frac{e^x}{\sqrt{b} x^{3/2}} \cdot \frac{2ax^2 + 2x(1-a) - 3}{2x \sqrt{ax+1}} =$$

$$= \frac{e^x [2ax^2 + 2x(1-a) - 3]}{2x^{5/2} \sqrt{(ax+1) \cdot b}}$$