

D

$$\frac{\frac{1}{132}(3x^2+6xy^2)}{\frac{9}{132} \cdot (x^2+6x)} \rightarrow \frac{\frac{1}{132} \cdot 3x \cdot (x+2y^2)}{\frac{9}{132} \cdot x \cdot (x+6)} \rightarrow \frac{\frac{3}{132}(x+2y^2)}{\frac{9}{132}(x+6)}$$

$$\int_0^3 y \cdot \frac{1}{3} \left(\frac{x+2y^2}{x+6} \right) \cdot dy$$

$$\frac{1}{6(x+6)} \int_0^9 (2u+x) du$$

$$\frac{1}{3(x+6)} \int_0^9 u du + \frac{x}{6(x+6)} \int_0^9 du$$

$$\frac{27}{2(x+6)} + \frac{0x}{6(x+6)} \Big|_{u=0}^9$$

$$\frac{27}{2(x+6)} + \frac{3x}{2(x+6)}$$

$$\frac{3x+27}{2(x+6)}$$

$$\boxed{\frac{3(x+9)}{2(x+6)}}$$

$$\text{E } p(x,y) = \int_0^2 \int_x^3 \frac{1}{132}(3x^2+6xy^2) dx dy$$

$$\int_x^3 \frac{1}{132}(3x^2+6xy^2) dy dx$$

$$\frac{1}{132} \int_x^3 3x^2 dy + \frac{1}{132} \int_x^3 6xy^2 dy$$

$$\frac{3x^2}{132} \int_x^3 dy + \frac{6x}{132} \int_x^3 y^2 dy$$

$$\frac{3x^2}{132} [y]_x^3 + \frac{6x}{132} \left[\frac{1}{3} y^3 \right]_x^3$$

$$\frac{9x^2}{132} - \frac{3x^3}{132} + \frac{54x}{132} - \frac{2x^4}{132}$$

$$\int_0^2 \frac{-2x^4 - 3x^3 + 9x^2 + 54x}{132} dx$$

$$\frac{1}{132} \int_0^2 -2x^4 - 3x^3 + 9x^2 + 54x dx$$

$$\frac{1}{132} \left[-\frac{2}{5} x^5 - \frac{3}{4} x^4 + 3x^3 + 27x^2 \right]_0^2$$

$$= \boxed{0.812}$$