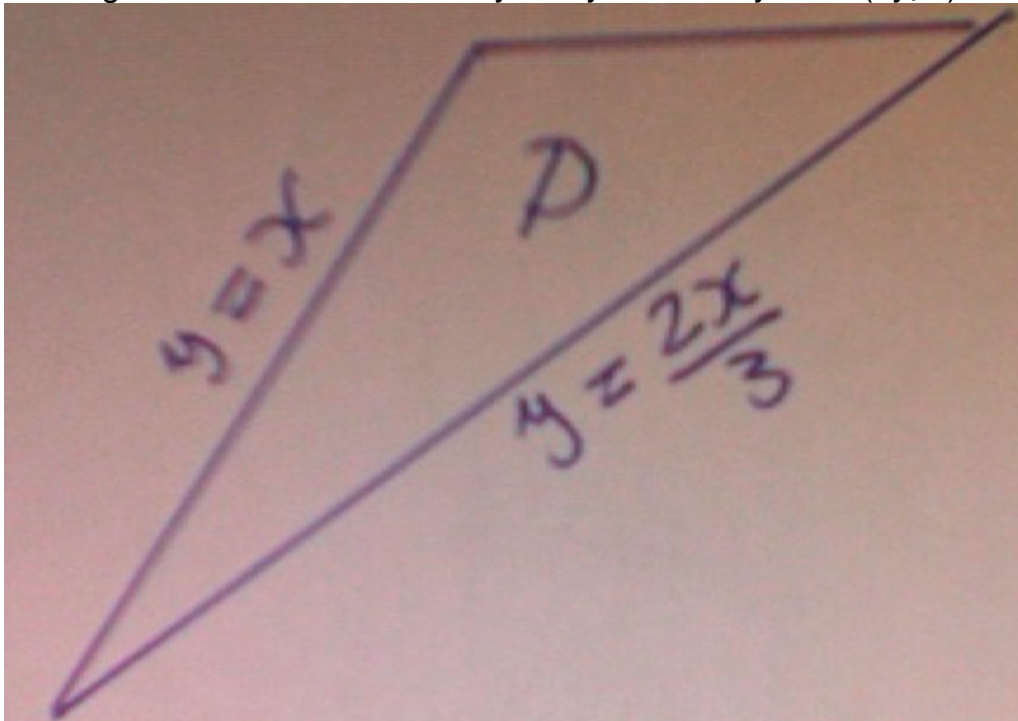


3

The region D can be described by $0 \leq y \leq 2$ and $y \leq x \leq (3y/2)$.



Therefore the double integral of $f(x,y) = (x^4) \cdot y$ over D is...

$$\begin{aligned} \iint_D x^4 y \, dA &= \int_0^2 \int_y^{\frac{3y}{2}} x^4 y \, dx \, dy \\ &= \int_0^2 \left(\left(\frac{x^5 y}{5} \right) \Big|_y^{\frac{3y}{2}} \right) dy = \int_0^2 \frac{211 y^6}{160} dy \\ &= \frac{211}{160} \left(\frac{y^7}{7} \right) \Big|_0^2 \approx \boxed{24.11} \end{aligned}$$