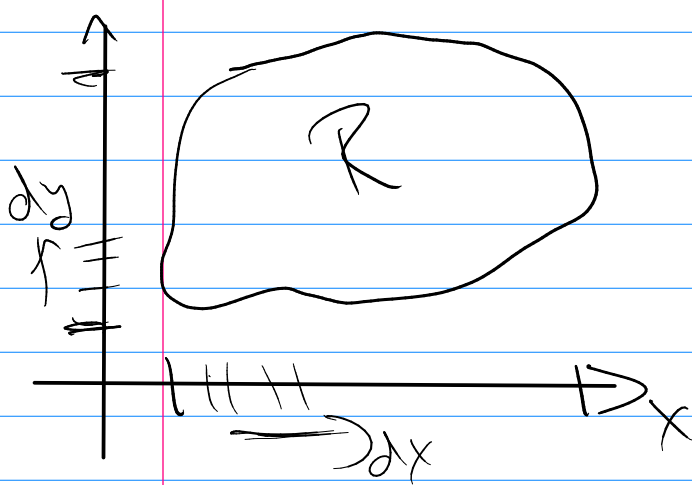


Math 344

~~Q's~~ Note: Next week will have a
webassign "extra credit" assignment
10pts to Exam 1



$$\iint_R f(x,y) dA$$

$$\int_{\text{bottom}}^{\text{top}} \left[\int_{\text{left}}^{\text{right}} f(x,y) dx \right] dy$$

(vs)

$$\int_{\text{left}}^{\text{right}} \left[\int_{\text{bottom}}^{\text{top}} f(x,y) dy \right] dx$$

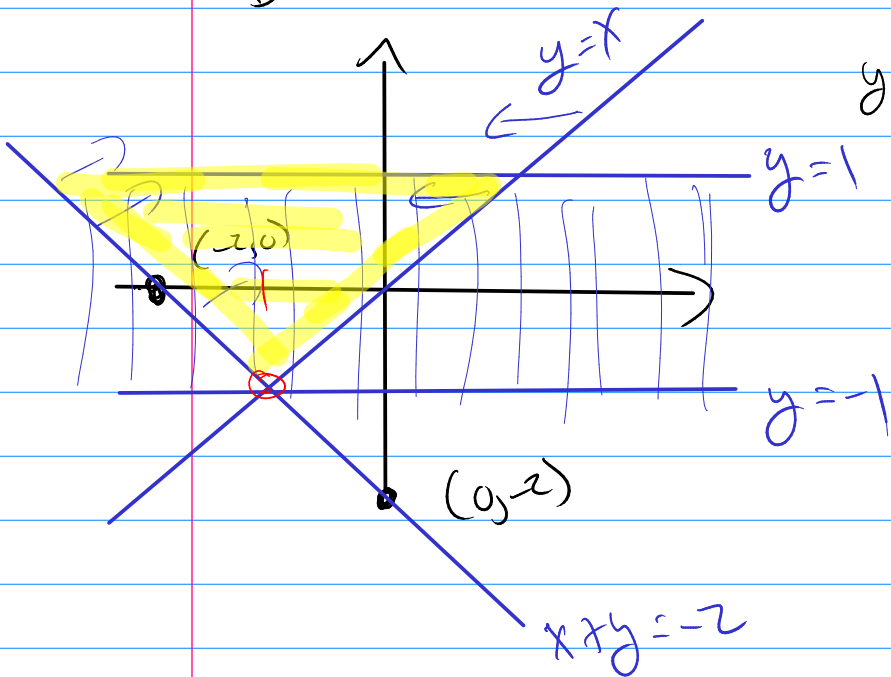
$$\iint_D y^2 dA$$

$$D: \begin{cases} -1 \leq y \leq 1 \\ -y-2 \leq x \leq y \end{cases}$$

$$y = -1 \quad y = 1$$

$$x = -y-2 \quad x = y$$

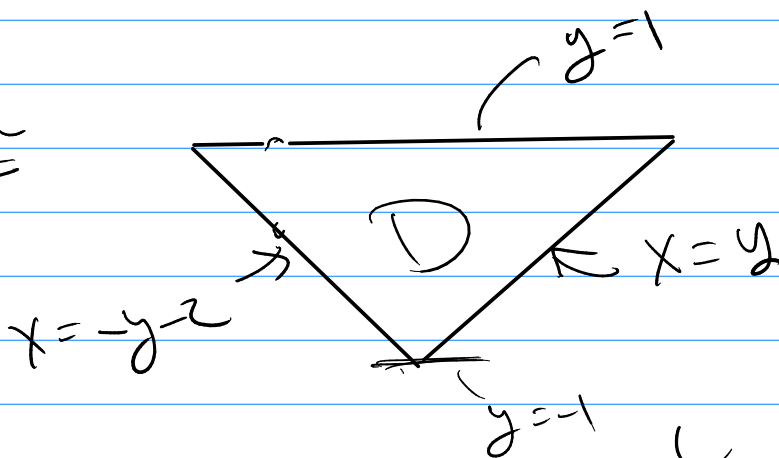
$$x+y = -2$$



$$\begin{cases} y = x \\ x + y = -2 \end{cases} \quad \text{cos } \vec{\nu}$$

$$\begin{matrix} 2y = -2 \\ y = -1 \end{matrix}$$

Rechte



$$\iint_D f dA = \int_{-1}^1 \left(\int_{-y-2}^y f dx \right) dy$$

$$\int_{-1}^1 \left(\int_{-y-2}^y (y^2) dx \right) dy = \int_{-1}^1 y^2 \left(\int_{-y-2}^y 1 dx \right) dy$$

$$= \int_{-1}^1 y^2 \left[x \Big|_{x=-y-2}^{x=y} \right] dy$$

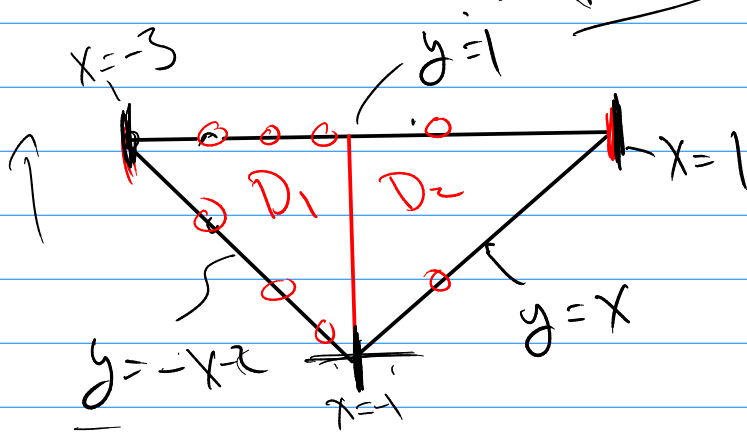
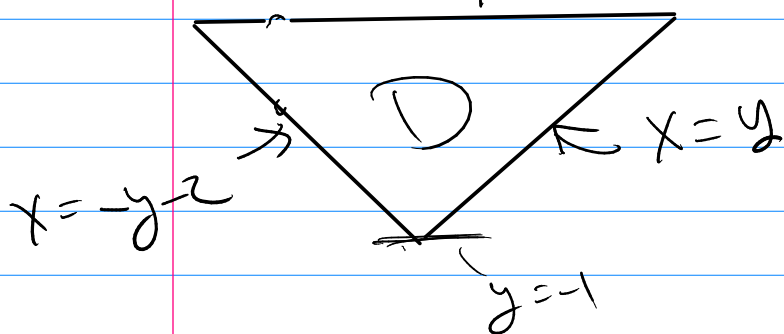
$$= \int_{-1}^1 y^2 \left[(y) - (-y-2) \right] dy$$

$$= \int_{-1}^1 y^2 [2y+2] dy$$

$$= \int_{-1}^1 (2y^3 + 2y^2) dy$$

$$= \left. \frac{1}{2} y^4 + \frac{2}{3} y^3 \right|_{y=-1}^{y=1}$$

$$= \left(\frac{1}{2} + \frac{2}{3} \right) - \left(\frac{1}{2} - \frac{2}{3} \right) = \frac{4}{3}$$



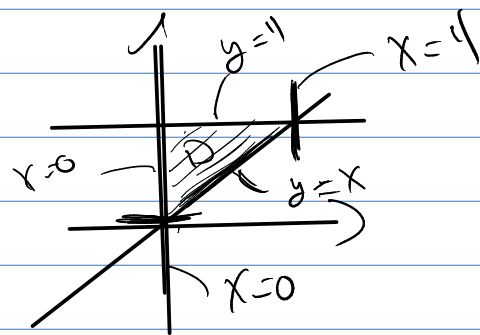
$$\iint_{D_1} f dA + \iint_{D_2} f dA = \int_{-3}^{-1} \left(\int_{-x-2}^1 y^2 dy \right) dx + \int_{-1}^1 \left(\int_x^1 y^2 dy \right) dx$$

$$\iint_D y^2 e^{xy} dA \quad D \text{ is between } y=x$$

$$\int_0^4 \left(\int_x^4 y^2 e^{xy} dy \right) dx$$

$$y=4$$

$$x=0$$



$$\textcircled{15} \int_0^4 \left(\int_0^y y^2 e^{xy} dx \right) dy$$

$$\int_0^y e^{xy} dx = \frac{1}{y} \int_0^{y^2} e^u du = \frac{1}{y} (e^{y^2} - 1)$$

$u = xy$
 $du = dx$

$$= \int_0^4 y^2 \left(\frac{1}{y} (e^{y^2} - 1) \right) dy$$

$$= \int_0^4 \left[y e^{y^2} - y \right] dy = \left[\frac{1}{2} e^{y^2} - \frac{1}{2} y^2 \right]_0^4$$

= Finish!