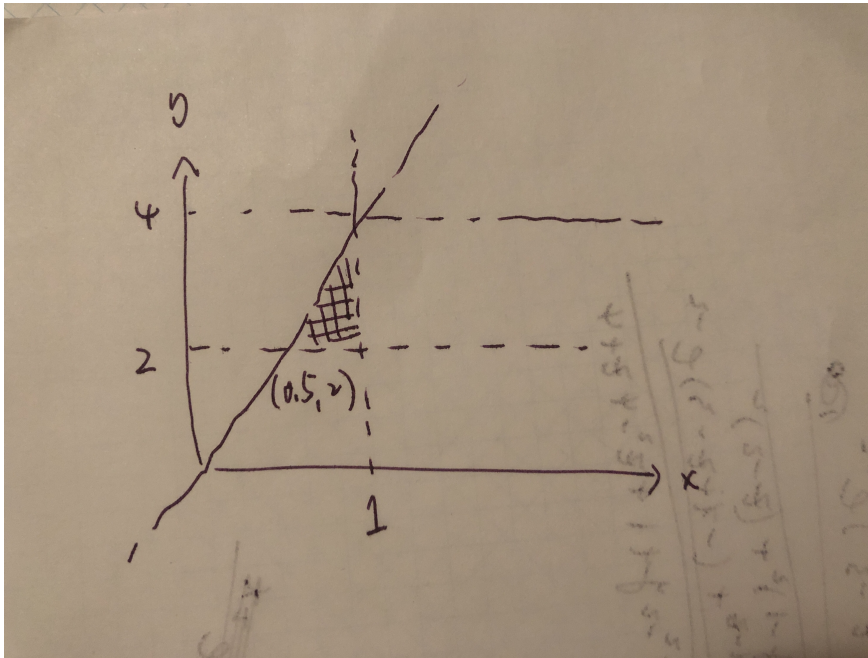


Math 180A HW0

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Problem 4



(a)

(b)

$$\iint_D 6xy^2 dx dy = \int_2^4 \int_{0.5}^1 6xy^2 dx dy \quad (1)$$

$$= \int_2^4 \int_{0.5}^1 6xy^2 dx dy \quad (2)$$

$$= \int_2^4 3x^2 y^2 dy \Big|_{0.5}^1 \quad (3)$$

$$= \int_2^4 (3y^2) - (0.75y^2) dy \quad (4)$$

$$= \int_2^4 2.25y^2 dy \quad (5)$$

$$= 0.75y^3 \Big|_2^4 \quad (6)$$

$$= 0.75 \cdot 4^3 - 0.75 \cdot 2^3 \quad (7)$$

$$= 42 \quad (8)$$

Problem 5

- (a) $A \cap B \cap C$
- (b) $A \cap B^c \cap C^c$
- (c) $A \cup B$
- (d) $A \cap B \cap C^c$

Problem 6

- (a) 2^{10}
- (b) $\binom{10}{5}$

Problem 7

- (a)

$$\sum_{k=0}^{\infty} \frac{x^{2k}}{4^k} = \sum_{k=0}^{\infty} \left(\frac{x^2}{4} \right)^k \quad (9)$$

$$= \frac{1}{1 - \frac{x^2}{4}} \quad (10)$$

- (b)

$$\sum_{k=0}^{\infty} \frac{x^{k+1}}{k!} = \sum_{k=0}^{\infty} \frac{x^k}{k!} \cdot x \quad (11)$$

$$= x \cdot e^x \quad (12)$$