

$$\int_0^6 x + 2y + 3z = 6, \quad \hat{n} = \frac{\hat{i} + 2\hat{j} + 3\hat{k}}{\sqrt{14}}$$

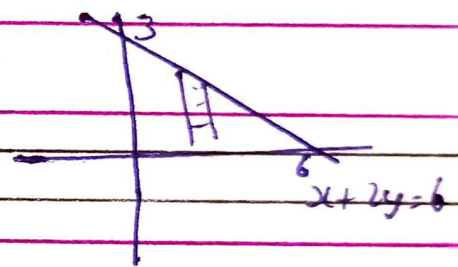
$$\int F \cdot d\vec{S} = \iint \frac{(x+y^2) - 4x + 6yz}{\sqrt{14}} \times \frac{3}{\sqrt{14}} dx dy$$

$$\Rightarrow \frac{1}{3} \iint -3x + y^2 + 6y \frac{(6-x-2y)}{3} dx dy$$

$$\Rightarrow \frac{1}{3} \iint -3x + y^2 + 12y - 2xy - 4y^2 dx dy$$

$$\Rightarrow \frac{1}{3} \iint_A -3x - 3y^2 + 12y - 2xy$$

$$\Rightarrow \frac{1}{3} \int_{x=0}^6 \int_{y=0}^{\frac{6-x}{2}} (-3x - 3y^2 + 12y - 2xy) dy dx$$



$$\Rightarrow \frac{1}{3} \int_{x=0}^6 \left[-3xy - y^3 + 6y^2 - xy^2 \right]_0^{\frac{6-x}{2}} dx$$

$$\Rightarrow \frac{1}{3} \int_{x=0}^6 \left[-3x \left(\frac{6-x}{2} \right) - \left(\frac{6-x}{2} \right)^3 + 6 \left(\frac{6-x}{2} \right)^2 - x \left(\frac{6-x}{2} \right)^2 \right] dx$$

$$\Rightarrow \frac{1}{3}$$

Simple calculation
solve yourself