

$$S: y^2 - 8x = 0$$

$$\hat{n} = \frac{-8\hat{i} + 2y\hat{j}}{\sqrt{64 + 4y^2}}$$

$$\iint F n dS = \int \int \frac{-16y - 6y}{\sqrt{64 + 4y^2}} \times \frac{dy dz}{\sqrt{64 + 4y^2}}$$

$$\Rightarrow \frac{22}{8} \int_{z=0}^{6} \int_{y=0}^4 y dy dz$$

$$\Rightarrow \frac{22}{8} \times \frac{6}{2} \times 16 = \boxed{132}$$