$\int y\,dx + z\,dy + x\,dz$

$C: x\sqrt{F}, \; y = t, \; z = t^2 \quad , 1 < t < 4$

· Calculando derivadas:

$\dfrac{dx}{dt} = \dfrac{1}{2}t^{-\frac{1}{2}} \quad ; \quad \dfrac{dy}{dt} = 1 \quad ; \quad \dfrac{dz}{dt} = 2t$

· $\int y\,dx + z\,dy + x\,dz = \int_1^4 t\left(\dfrac{1}{2}t^{-\frac{1}{2}}\right)dt + t^2\,dt + \sqrt{t}\,2t\,dt \Rightarrow$

$\int y\,dx + z\,dy + x\,dz = \int_1^4 \left(\dfrac{1}{2}t^{\frac{1}{2}} + t^2 + 2t^{\frac{3}{2}}\right)dt$

· $\left[\dfrac{1}{3}t^{\frac{3}{2}} + \dfrac{1}{3}\cdot t^3 + \dfrac{4}{5}\cdot t^{\frac{5}{2}}\right]_1^4 = \left(\left[\dfrac{1}{3}\cdot 4^{\frac{3}{2}} + \dfrac{1}{3}\cdot 4^3 + \dfrac{4}{5}\cdot 4^{\frac{5}{2}}\right] - \left[\dfrac{1}{3}\cdot 1^{\frac{3}{2}} + \dfrac{1}{3}\cdot 1^3 + \dfrac{4}{5}\cdot 1^{\frac{5}{2}}\right]\right) \Rightarrow$

$\left[\dfrac{1}{3}\cdot t^{\frac{3}{2}} + \dfrac{1}{3}\cdot t^3 + \dfrac{4}{5}\cdot t^{\frac{5}{2}}\right]_1^4 = \dfrac{8}{3} + \dfrac{64}{3} + \dfrac{125}{5} - \left(\dfrac{1}{3} - \dfrac{1}{3} - \dfrac{4}{5}\right) = \dfrac{722}{15}$

∴ O resultado da integral é $\dfrac{722}{15}$