Aula 21 - 16.2/21

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· Integral de linha:

· $\int_C F \cdot dr = \int_0^1 F(r(t)) \cdot r'(t)\, dt$

· $F(r(t)) = \text{sen}(t^3)\, i + \cos(-t^2)\, j + t^3 \cdot t\, k$

· É possível usar $\cos(-t^2) = \cos(t^2)$

$F(r(t)) = \text{sen}(t^3)\, i + \cos(t^2)\, j + t^4 k$

$r'(t) = 3t^2 \cdot i - 2t\, j + k$

· $\int_0^1 F(r(t)) \cdot r'(t)\, dt = \int_0^1 (\text{sen}(t^3), \cos(t^2), t^4) \cdot (3t^2, -2t, 1)\, dt = \int_0^1 (3t^2 \cdot \text{sen}(t^3) - 2t \cdot \cos(t^2) + t^4)\, dt$

· $\int_0^1 (3t^2 \cdot \text{sen}(t^3) - 2t \cdot \cos(t^2) + t^4)\, dt = \left[-\cos(t^3) - \text{sen}(t^2) + \frac{t^5}{5} \right]_0^1 = -\cos(1) - \text{sen}(1) + \frac{1}{5} + 1 + 0 = \frac{6}{5} - \text{sen}(1) - \cos(1)$

$\therefore \frac{6}{5} - \text{sen}(1) - \cos(1)$