

EXERCÍCIO 8



$$\int x^2 \sqrt{1+x} dx = \int (u-1)^2 \cdot \sqrt{u} du =$$

$$(a-b)^2 = a^2 - 2ab + b^2$$
$$\sqrt{a^b} = a^{b/c}$$

$$u = 1+x \Rightarrow u-1 = x$$

$$du = 1 dx$$

$$\underline{du} = \underline{dx}$$

$$= \int (u^2 - 2u + 1) \cdot u^{\frac{1}{2}} du =$$

$$= \int u^{\frac{5}{2}} - 2u^{\frac{3}{2}} + u^{\frac{1}{2}} du =$$

$$= \frac{u^{\frac{7}{2}}}{\frac{7}{2}} - 2 \frac{u^{\frac{5}{2}}}{\frac{5}{2}} + \frac{u^{\frac{3}{2}}}{\frac{3}{2}} = \frac{2}{7} u^{\frac{7}{2}} - \frac{4}{5} u^{\frac{5}{2}} + \frac{2}{3} u^{\frac{3}{2}} =$$

$$= \frac{2}{7} (1+x)^{\frac{7}{2}} - \frac{4}{5} (1+x)^{\frac{5}{2}} + \frac{2}{3} (1+x)^{\frac{3}{2}} + C //$$

$$\frac{2}{7} \cdot \frac{2}{5} = \frac{4}{35}$$