lista 26 - Exercício 12

$$\int p^5 \ln p \, dp$$

$u = \ln p$ $\quad dv = p^5 dp$

$\frac{du}{dp} = \frac{1}{p}$ $\quad v = \int p^5 dp$

$du = \frac{1}{p} dp$ $\quad v = \frac{p^6}{6}$

$$\int u dv = uv - \int v \, du$$

$$\int p^5 \ln p \, dp = \ln p \cdot \frac{p^6}{6} - \int \frac{p^6}{6} \cdot \frac{1}{p} dp$$

$$\int p^5 \ln p \, dp = \frac{p^6 \ln p}{6} - \frac{1}{6} \int p^5 dp$$

$$\int p^5 \ln p \, dp = \frac{p^6 \ln p}{6} - \frac{1}{6} \frac{p^6}{6} + C$$

$$\int p^5 \ln p \, dp = \frac{1}{6} p^6 \ln p - \frac{1}{36} p^6 + C$$