Calcular a integral definida $I = \int_0^1 \frac{y^2}{\sqrt{4-3y}}\, dy$.

Seja $4-3y = x$, $y = \frac{4-x}{3}$ e $dx = -3dy$.

$$I = -\frac{1}{27}\int_4^1 \frac{16-8x+x^2}{\sqrt{x}}\, dx = -\frac{1}{27}\left(32\sqrt{x} - \frac{16}{3}\sqrt{x^3} + \frac{2}{5}\sqrt{x^5}\right)\Big|_4^1 =$$

$$= -\frac{32 - 64 - \frac{16}{3} + \frac{128}{3} + \frac{2}{5} - \frac{64}{5}}{27} = \boxed{\frac{106}{405}}$$

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Sugestões, comunicar erros: "a.vandre.g@gmail.com".