



Centro Universitário UNA  
Cálculo Integral  
6ª Lista de Exercícios - Integral Definida  
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1. Calcule:

(a)  $\int_0^3 \sqrt{y+1} dy$

(b)  $\int_{-1}^0 \sqrt{y+1} dy$

(c)  $\int_0^\pi 3 \cos^2 x \sin x dx$

(d)  $\int_{2\pi}^{3\pi} 3 \cos^2 x \sin x dx$

(e)  $\int_{-1}^1 \frac{5r}{(4+r^2)^2} dr$

(f)  $\int_0^1 \frac{5r}{(4+r^2)^2} dr$

2. Calcule as seguintes integrais definidas:

(a)  $\int_0^2 (x-1)^{25} dx$

(b)  $\int_0^1 x^2(1+2x^3)^5 dx$

(c)  $\int_0^1 \frac{dy}{\sqrt{3y+1}}$

(d)  $\int_1^5 \sqrt{2x-1} dx$

(e)  $\int_0^4 (2x+1)^{-\frac{1}{2}} dx$

(f)  $\int_0^3 x\sqrt{1+x} dx$

(g)  $\int_{\frac{\pi}{4}}^{\frac{3\pi}{4}} \sin x \cos x dx$

(h)  $\int_{-1}^1 \frac{x^2 dx}{\sqrt{x^3+9}}$

(i)  $\int_1^2 x\sqrt{x-1} dx$

- (j)  $\int_e^{e^4} \frac{dx}{x\sqrt{\ln x}} dx$
- (k)  $\int_0^{13} \frac{dx}{\sqrt[3]{(1+2x)^2}}$
- (l)  $\int_1^2 \frac{e^{\frac{1}{x}}}{x^2} dx$
- (m)  $\int_1^2 x \ln x dx$
- (n)  $\int_0^{\frac{\pi}{2}} \frac{\cos x}{(1+\sin x)^5} dx$
- (o)  $\int_0^{\frac{\pi}{2}} e^{\sin x} \cos x dx$
- (p)  $\int_{\ln \frac{\pi}{6}}^{\ln \frac{\pi}{2}} 2e^v \cos e^v dv$

### Respostas

- 1) a)  $\frac{14}{3}$       b)  $\frac{2}{3}$       c) 2      d) 2      e) 0      f)  $\frac{1}{8}$       2) a) 0      b)  $\frac{182}{9}$   
 c)  $\frac{2}{3}$       d)  $\frac{26}{3}$       e) 2      f)  $\frac{116}{15}$       g) 0      h)  $\frac{2\sqrt{2}}{3}(\sqrt{5}-2)$       i)  $\frac{16}{15}$   
 j) 2      k) 3      l)  $e - \sqrt{e}$       m)  $2\ln 2 - \frac{3}{4}$       n)  $\frac{15}{64}$       o)  $e - 1$       p) 1