UNIVERSIDADE FEDERAL DA GRANDE DOURADOS
Prof. Adriano Barbosa
Cálculo II

03 de Agosto de 2016

1	
2	
3	
4	
5	
Total	

Aluno(a): .....

(1) Calcule a integral indefinida $\int x(2x-5)^8\ dx$.

(2) Calcule a integral definida $\int_1^3 r^3 \ln(r)\ dr$.

(3) Calcule as integrais:
   (a) $\int \frac{1}{x^4}\ dx$
   (b) $\int_{-2}^{3} \frac{1}{x^4}\ dx$

(4) Utilize substituição trigonométrica para calcular a integral $\int \frac{x^2}{\sqrt{1-x^2}}\ dx$.

(5) Dados os polinômios $p(x) = x^3 + 4$ e $q(x) = x^2 + 4$:
   (a) Divida $p(x)$ por $q(x)$.
   (b) Fatore $q(x)$.
   (c) Calcule a integral $\int \frac{p(x)}{q(x)}\ dx$.

Fórmulas úteis:

$$\operatorname{cosec}(x) = \frac{1}{\operatorname{sen}(x)} \qquad \sec(x) = \frac{1}{\cos(x)} \qquad \operatorname{cotg}(x) = \frac{\cos(x)}{\operatorname{sen}(x)}$$

$$\operatorname{sen}^2(x) + \cos^2(x) = 1 \qquad \operatorname{tg}^2(x) + 1 = \sec^2(x) \qquad 1 + \operatorname{cotg}^2(x) = \operatorname{cosec}^2(x)$$

$$\operatorname{sen}^2(x) = \frac{1-\cos(2x)}{2} \qquad \cos^2(x) = \frac{1+\cos(2x)}{2} \qquad \int \frac{1}{x^2+a^2}\ dx = \frac{1}{a}\operatorname{arctg}\left(\frac{x}{a}\right) + c$$

$$\operatorname{sen}(x+y) = \operatorname{sen}(x)\cos(y) + \operatorname{sen}(y)\cos(x) \qquad \operatorname{sen}(x-y) = \operatorname{sen}(x)\cos(y) - \operatorname{sen}(y)\cos(x)$$

$$\cos(x+y) = \cos(x)\cos(y) - \operatorname{sen}(x)\operatorname{sen}(y) \qquad \cos(x-y) = \cos(x)\cos(y) + \operatorname{sen}(x)\operatorname{sen}(y)$$

Boa Prova!