

MAT143 – Cálculo para Ciências Biológicas
Respostas da Lista de Exercícios 5

1. (a) $1000x(x^2 - 2)^{499}$
(b) $3(3x - 1)^{-2}$
(c) $2x(x - 1)(2x - 1)^{-5}$
(d) $\frac{-2(2x - 1)^2(x^2 - 2x - 9)}{(x^2 + 3)^3}$

2. (a) $\frac{5}{2}x^{3/2} - \frac{3}{2}x^{1/2}$
(b) $\frac{1}{3}(x + x^{5/2})^{-2/3}(1 + \frac{5}{2}x^{3/2})$
(c) $\frac{2x}{(x^2 + 1)^2} \sqrt{\frac{x^2 + 1}{x^2 - 1}}$

3. (a) $-\sin 2x$
(b) $-2x \sin(x^2)$
(c) $\frac{\cos(\ln x)}{x}$
(d) $\cot x$
(e) $5^{\sqrt{x}} \ln 5 \frac{1}{2\sqrt{x}}$
(f) $e^{\sqrt{x}} \frac{1}{2\sqrt{x}} + \frac{1}{2} \sqrt{e^x}$
(g) $\ln(\sin(\ln x)) + \cot(\ln x)$