

MATEMÁTICA I

Licenciatura em Economia, Finanças e Gestão

2012-13 Teste de auto-avaliação (5) - Soluções

1.

(a) $Pf(x) = \frac{1}{3}(x+3)^3 + 4\ln(5+e^{5x}) + C, \quad C \in \mathbf{R};$

$$F(x) = \frac{1}{3}(x+3)^3 + 4\ln(5+e^{5x}) - 9 - 3\ln 6.$$

(b) $Pf(x) = -\frac{1}{20} \arctan\left(\frac{1}{4} \cos(5x)\right) + C, \quad C \in \mathbf{R};$

$$F(x) = -\frac{1}{20} \arctan\left(\frac{1}{4} \cos(5x)\right) + 5$$

(c) $Pf(x) = \frac{1}{15}(1+3x)^5 + \frac{1}{5}e^{5x} + \frac{1}{15}e^{3x^5} + C, \quad C \in \mathbf{R};$

$$F(x) = \frac{1}{15}(1+3x)^5 + \frac{1}{5}e^{5x} + \frac{1}{15}e^{3x^5} + 2$$

2.

(a) $Pf(x) = \frac{1}{2}xe^{2x} + \frac{1}{4}e^{2x} + C, \quad C \in \mathbf{R}$

(b) $Pf(x) = \arctan e^x + C, \quad C \in \mathbf{R}.$

3.

(a) $\frac{1}{10}$

(b) $\frac{1}{4}$

(c) $\frac{1}{9}$

4.

(a) Área (A) = $\frac{8}{3}$.

(b) Área (B) = $\frac{3}{2}$.

5.

(a) $6 \sin^7(3x) \cos(3x)$

(b) $\frac{1}{4}$