Universidade do Vale do Itajaí – UNIVALI
Curso de Ciência da Computação
Disciplina: Cálculo II
Professora: Denise Prado Kronbauer

Lista 3 – Integrais definidas

Calcule as integrais definidas a seguir:

1. $\int_0^1 \sqrt{1+x}\ dx$

2. $\int_{-1}^1 \frac{x}{(x^2+1)^2}\ dx$

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

4. $\int_0^8 \left(\sqrt{2x} + \sqrt[3]{x}\right) dx$
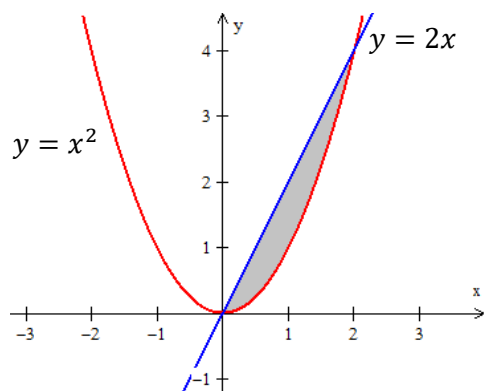
5. $\int_0^1 xe^{-x}\ dx$

6. $\int_0^\pi x^2 sen\ x\ dx$

7. $\int_0^{\pi/2} e^{2x} \cos x\ dx$
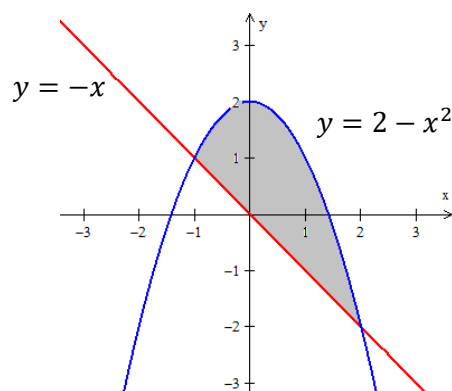
8. $\int_{-2}^0 \frac{x^2}{(x^3-2)^2}\ dx$

9. $\int_0^{-1} \frac{x^3+8}{x+2}\ dx$

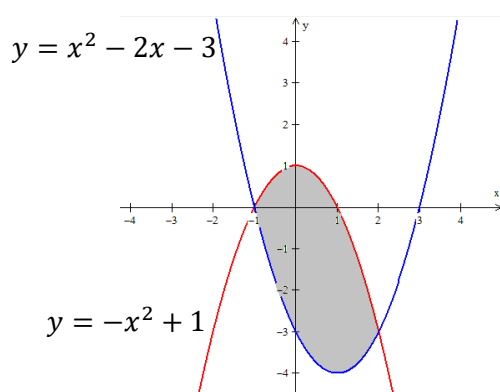10. $\int_{-3}^{-2} \left(t - \frac{1}{t}\right)^2 dt$
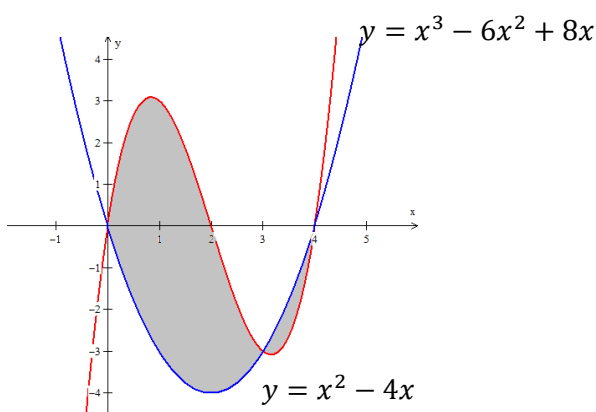
Obtenha a área das regiões indicadas nas figuras:

11.

12.

13.

14.

Analise a convergência das integrais:

15. $\int_{-\infty}^0 e^{5x}\ dx$

16. $\int_1^\infty \frac{x^2}{x^3+8}\ dx$

17. $\int_{-\infty}^\infty x\ dx$

18. $\int_5^\infty \frac{1}{(4-x)^2}\ dx$

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Lista 3 – Respostas

1. $\frac{2}{3}\left(2\sqrt{2}-1\right)$

2. 0

3. $\frac{5}{2}-2e$

4. $100/3$

5. $-\frac{2}{e}+1$

6. π^2-4

7. $\frac{e^\pi-2}{5}$

8. $2/15$

9. $16/3$

10. $\frac{9}{2}$

11. $\frac{4}{3}$

12. $10,5$

13. -7

14. $-25,5$

15. $Converge\ para\ \frac{1}{5}$

16. $Diverge$

17. $\not\pi$

18. $Converge\ para\ 1$