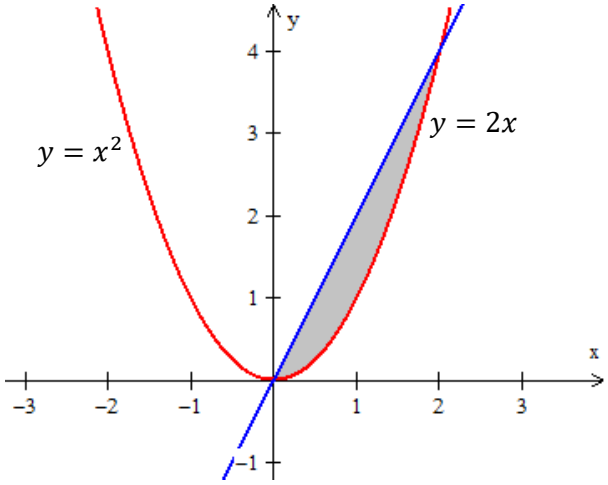
Lista 3 – Integrais definidas

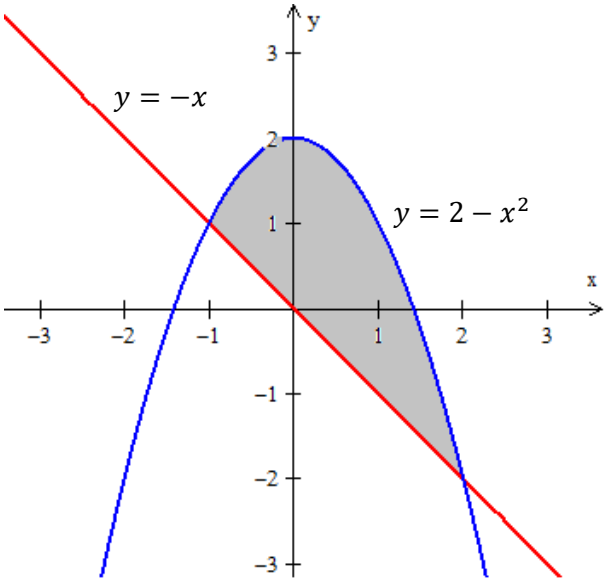
Calcule as integrais definidas a seguir:

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. $\int_0^{\pi/2} e^{2x} \cos x\ dx$

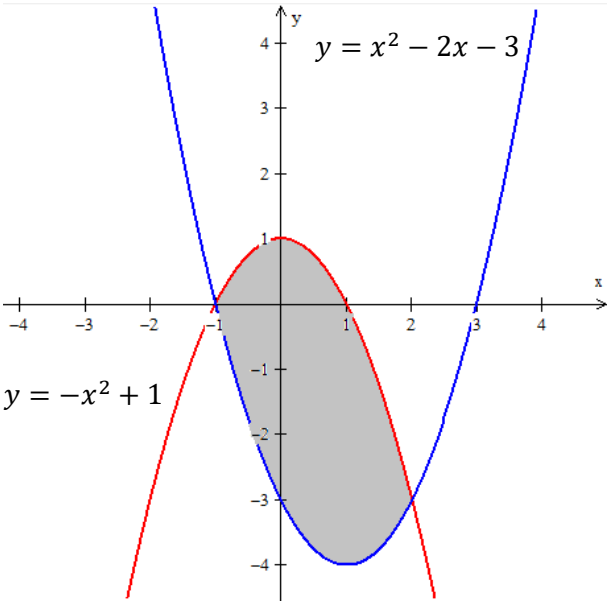
Obtenha a área das regiões indicadas nas figuras:



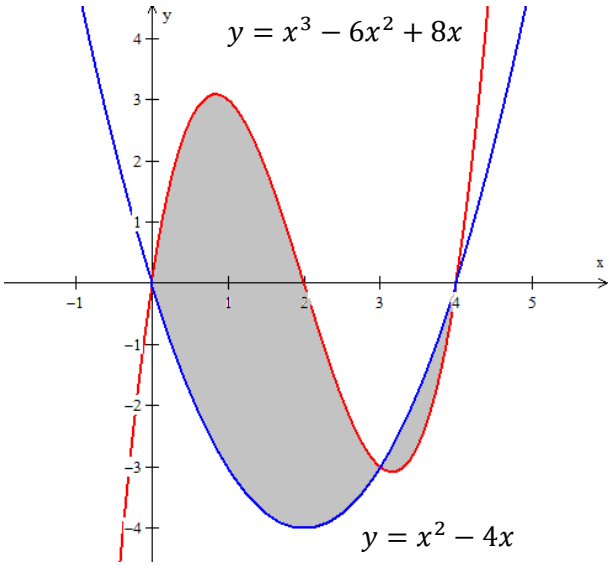
8.



9.



10.



11.

Analise a convergência das integrais:

12. $\int_{-\infty}^{0} e^{5x}\ dx$
13. $\int_{1}^{\infty} \frac{x^2}{x^3+8}\ dx$
14. $\int_{-\infty}^{\infty} x\ dx$
15. $\int_{5}^{\infty} \frac{1}{(4-x)^2}\ dx$

Encontre o comprimento de arco da curva seguinte no intervalo dados:

16. $y = 3x^{3/2} - 1$ de $x = 0$ até $x = 1$

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. $\pi^2 - 4$
7. $\frac{e^{\pi}-2}{5}$
8. $\frac{4}{3}$
9. $10{,}5$
10. -7
11. $-25{,}5$
12. $Converge\ para\ \frac{1}{5}$
13. $Diverge$
14. $\nexists$
15. $Converge\ para\ 1$
16. $\frac{2}{3}$