

Exercices 3

by Aram Dermenjian

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Un exercice marqué du symbole \star est considéré comme plus difficile et ne sera pas une question d'examen.

Exercice 1 Évaluer

$$\int_1^2 \frac{x^3 + 5x + 4}{x^3} dx$$

Exercice 2 Calculer les intégrales suivantes.

- (1) $\int \sqrt{2x+3} dx$
- (2) $\int -4(3x^2 - 5)^5 x dx$
- (3) $\int (x^3 - 4)x dx$
- (4) $\int \sec(x)^3 \tan(x) dx$
- (5) $\int \frac{3x}{\sqrt{-x^2+1}} dx$
- (6) $\int \frac{\sec(-\sqrt{x}+3)}{\sqrt{x}} dx$
- (7) $\int \frac{1}{(4x-3)^2} dx$
- (8) $\int \frac{12x^2}{x^3+8} dx$
- (9) $\int \cos(2x)^4 \sin(2x) dx$
- (10) $\int \frac{1}{\sqrt{x}(\sqrt{x}+5)} dx$
- (11) $\int \frac{1}{\sin(2x)^2} + \sin\left(\frac{1}{2}x\right) dx$
- (12) $\int \frac{3x+5}{x^2+1} dx$
- (13) $\star \int \frac{\log(x)^2}{x} dx$
- (14) $\star \int \frac{x^2-x-1}{x-1} dx$
- (15) $\star \int \frac{2(4x^2-x-3)}{4x-3} dx$
- (16) $\star \int \frac{\cos(x)}{\sin(x)^3+3 \sin(x)^2+3 \sin(x)+1} dx$

Exercice 3 Calculer les intégrales suivantes.

- (1) $\int_0^1 3(x^3+1)^7 x^2 dx$
- (2) $\int_0^1 \frac{6x+1}{3x^2+x-1} dx$
- (3) $\int_{\frac{1}{2}}^1 \frac{1}{(2x+1)^2} dx$
- (4) $\int_0^{\frac{\pi}{2}} \frac{\cos(x)}{(\sin(x)+1)^2} dx$
- (5) $\int_{-1}^0 e^{(3x+5)} dx$
- (6) $\int_0^2 2(2x+1)e^{(x^2+x)} dx$
- (7) $\star \int_0^1 \sqrt{-4x^4+8x^2} dx$

Exercice 4 Évaluer les intégrales suivantes.

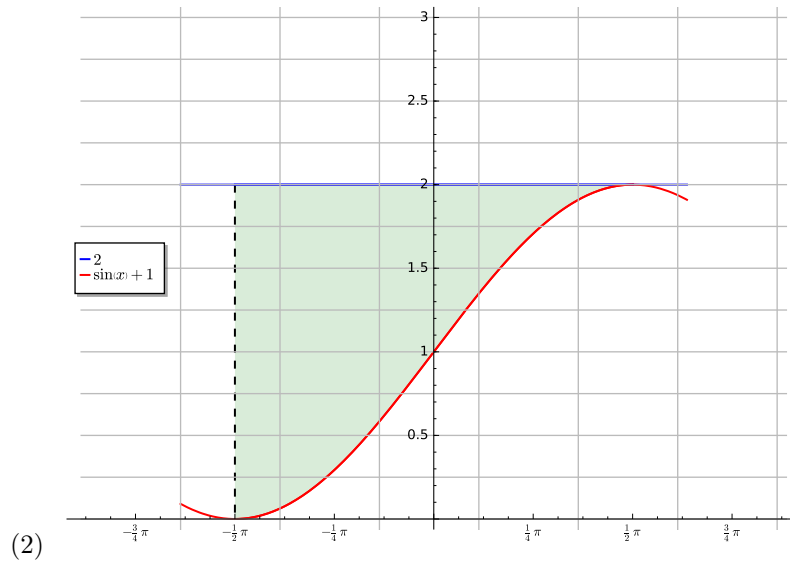
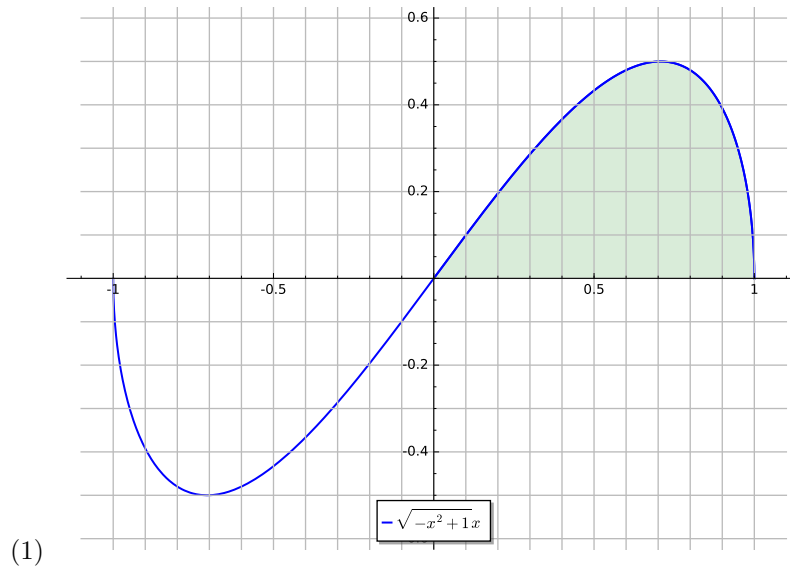
(1) $\int_{-3}^3 \frac{x^9 - x^3 + x}{2x^6 + 5x^2 + 9} dx$

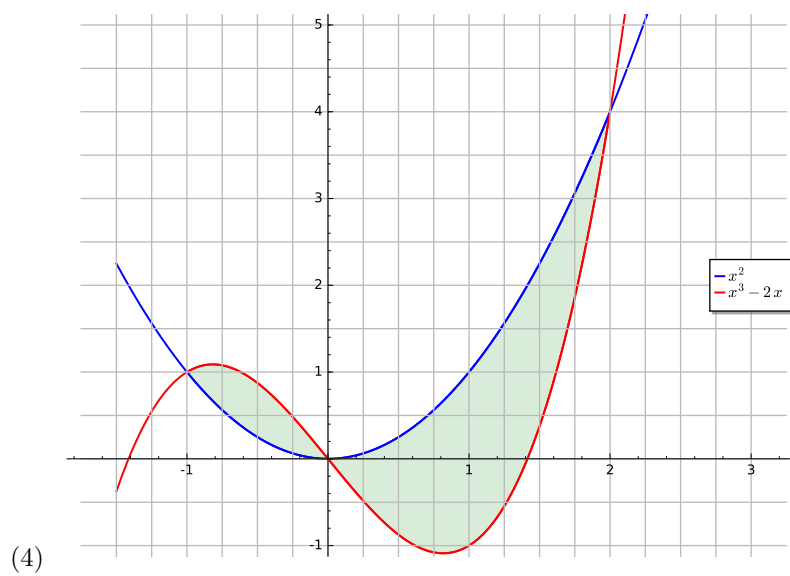
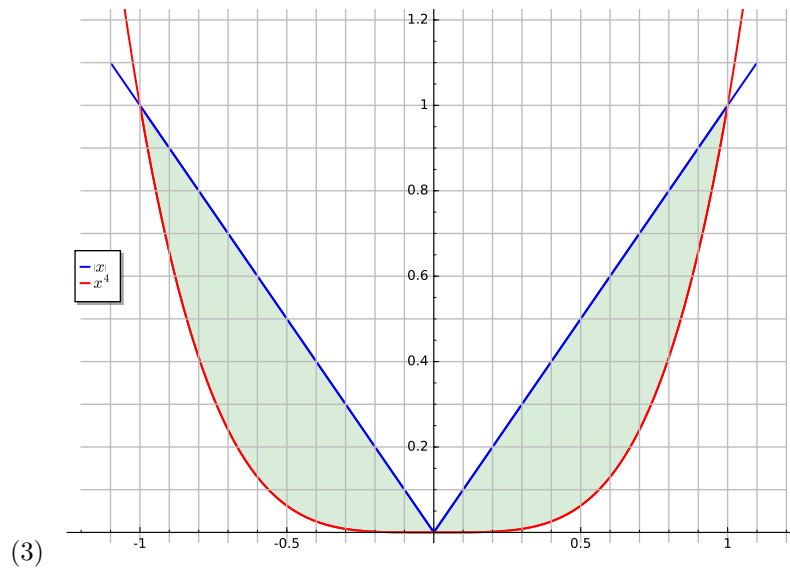
(2) $\int_{-1}^1 x^{15} \cos(x) + 3x^2 + (x^4 + 1)^{\frac{1}{7}} x dx$

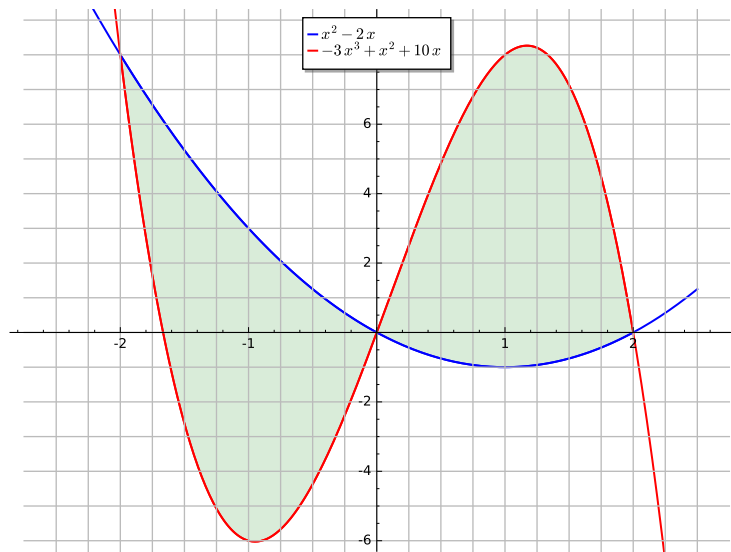
(3) $\int \frac{1}{\sqrt{-x^2 + 2x}} dx$

(4) $\int \frac{1}{4x^2 + 12x + 13} dx$

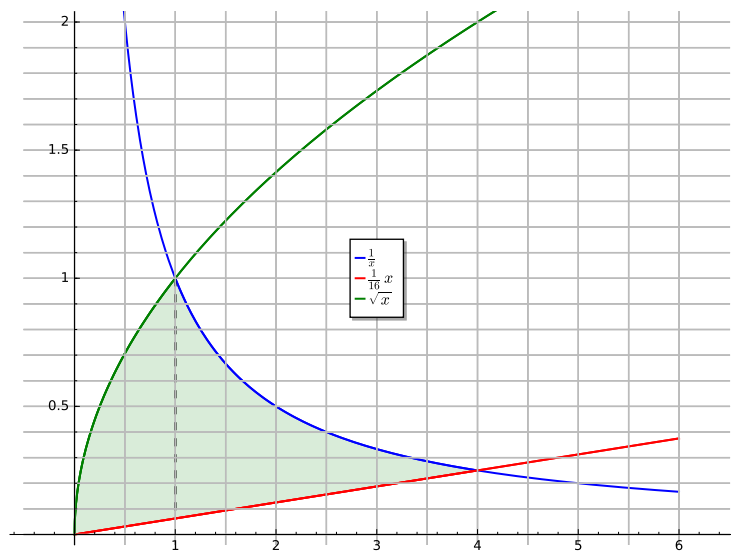
(5) $\int_0^2 \frac{x+4}{x^2+6x+10} dx$

Exercice 5 Trouver l'aire de la surface.





(5)



(6)