Applications:

10 Calculate (integral admits an absolute value) .

1° $\int_{-1}^{1} |x|\, dx$.

2° $\int_{-2}^{1} |x^2 - 1|\, dx$.

4° $\int_{-\frac{\pi}{4}}^{\frac{\pi}{4}} |x \cos x|\, dx$.

5° $\int_{-1}^{2} \frac{|t|}{\sqrt{1+t^2}}\, dt$.

7° $\int_{-6}^{2} |x^2 + 4x - 5|\, dx$..

8° $\int_{-1}^{2} \frac{|x|}{(1+x^2)^3}\, dx$.

15 The plane is that of an orthonormal system $(O\,;\vec{i}\,,\vec{j}\,)$ of unit 2 cm .

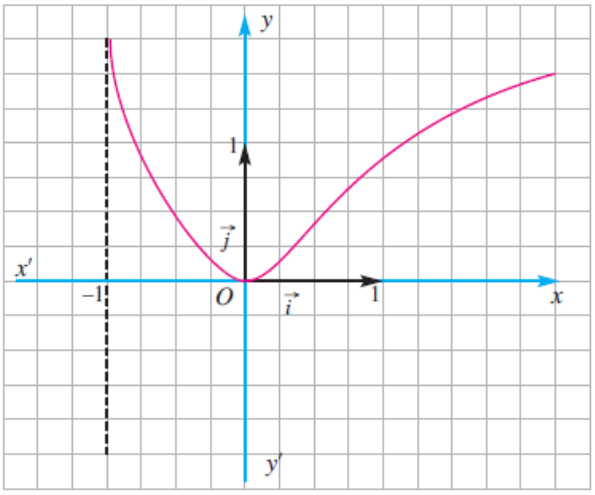
Consider the curve (C) of the function f defined by $f(x) = x + 1 + \frac{1}{x^2}$.

1° Show that the line (D) of equation $y = x + 1$ is an asymptote to (C) .

2° Study the position of (C) with respect to (D) .

3° Calculate the area of the domain limited by (C) , (D) and the two lines of equations $x = 1$ and $x = 2$. Give your answer in cm^2 .

27 Let (C) be the curve of the function f defined over $]-1\ ;+\infty[$ by $f(x)=\dfrac{x^2}{\sqrt{1+x^3}}$ in an orthonormal system $(O\ ;\vec{i}\ ,\vec{j}\ )$.

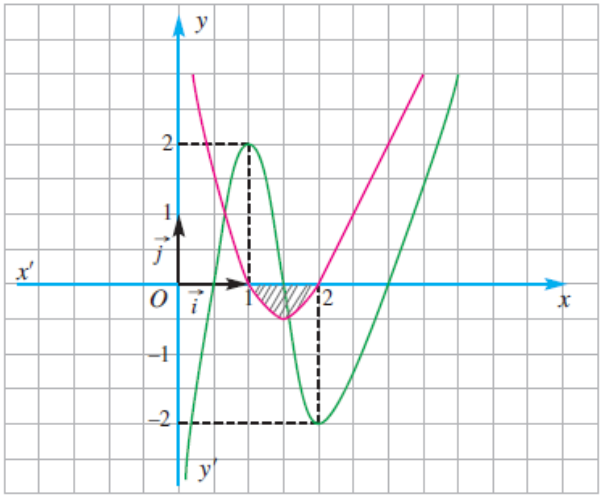


1° Set up the table of variation of f.

2° a) Calculate the area $\mathcal{A}(\lambda)$ of the domain limited by (C), $x'Ox$, $y'Oy$ and the line of equation $x=\lambda$, where $-1<\lambda<0$.

b) Deduce $\lim\limits_{\lambda\to-1}\mathcal{A}(\lambda)$.

30 Consider the two adjacent curves (C) and (C') in an orthonormal system $(O\ ;\vec{i}\ ,\vec{j}\ )$.



(C) is the curve of the function f defined over the interval $]0\ ;+\infty[$ and (C') is the curve of the function f', derivative of f.

1° Calculate $f(1)$ and $f(2)$.

2° Set up the table of variations of f.

3° Calculate the area of the shaded surface, limited by the curve (C') and $(x'Ox)$.