

Calculer $\int_2^3 \frac{x^2}{1+x^6} dx$.

La substitution $x^3 = t$, donc $x^2 dx = \frac{1}{3} dt$ conduit à

$$\int_2^3 \frac{x^2}{1+x^6} dx = \frac{1}{3} \int_8^{27} \frac{dt}{1+t^2}$$

$$= \frac{1}{3} \left[\arctan t \right]_8^{27}$$

$$= \boxed{\frac{1}{3} (\arctan 27 - \arctan 8)}$$