Calculer les primitives de :

a) $f(x) = \dfrac{4x-2}{\sqrt{x^2-x-1}}$ **sur** $I = [2\ ;+\infty[$ **.**

$f = \sqrt{u} \Rightarrow f' = \dfrac{u'}{2\sqrt{u}}$, avec $u = x^2 - x - 1 \Rightarrow u' = 2x - 1$.

$f(x) = \dfrac{4x-2}{\sqrt{x^2-x-1}} = 4\left(\dfrac{2x-1}{2\sqrt{x^2-x-1}}\right) = 4\left(\dfrac{u'}{2\sqrt{u}}\right) \Rightarrow F_k(x) = 4\sqrt{u} + k = 4\sqrt{x^2-x-1} + k\ ,\ \forall k \in \mathbb{R}$.

b) $f(x) = \dfrac{2}{\sqrt{1-2x}} + \dfrac{x}{\sqrt{x^2+2}}$ **sur** $I =]-\infty\ ; 0[$ **.**

$u = 1 - 2x \Rightarrow u' = -2$ et $v = x^2 + 2 \Rightarrow v' = 2x$.

$f(x) = \dfrac{2}{\sqrt{1-2x}} + \dfrac{x}{\sqrt{x^2+2}} = -2\left(\dfrac{-2}{2\sqrt{1-2x}}\right) + \dfrac{2x}{2\sqrt{x^2+2}} = -2\left(\dfrac{u'}{2\sqrt{u}}\right) + \dfrac{v'}{2\sqrt{v}}$,

D'où : $F_k(x) = -2\sqrt{u} + \sqrt{v} + k = -2\sqrt{1-2x} + \sqrt{x^2+2} + k\ ,\ \forall k \in \mathbb{R}$.