1) Calcule as seguintes integrais indefinidas:

(1,5) a) $\displaystyle\int \frac{dx}{(x+1)\sqrt{x+10}} \underset{\downarrow}{=} \int \frac{2udu}{(u^2-9)u} = \int \frac{2du}{(u-3)(u+3)} = \int \left[\frac{A}{u-3} + \frac{B}{u+3}\right] du = (*)$

$$\boxed{\begin{array}{rcl} u &=& \sqrt{x+10} \\ x &=& u^2-10 \\ x+1 &=& u^2-9 \\ dx &=& 2udu \end{array}}$$

$$\boxed{\begin{array}{c} \dfrac{2}{(u-3)(u+3)} = \dfrac{A}{u-3} + \dfrac{B}{u+3} = \dfrac{(A+B)u+3A-3B}{(u-3)(u+3)} \\ \left\{\begin{array}{l} A+B=0 \\ 3A-3B=2 \end{array}\right. \Rightarrow \left\{\begin{array}{l} A=1/3 \\ B=-1/3 \end{array}\right. \end{array}}$$

$$(*) = \int \left[\frac{1/3}{u-3} + \frac{-1/3}{u+3}\right] du = \frac{1}{3}\ \ln|u-3| - \frac{1}{3}\ \ln|u+3| + k =$$

$$= \frac{1}{3}\ \ln\ \left|\sqrt{x+10}-3\right| - \frac{1}{3}\ \ln\ \left|\sqrt{x+10}+3\right| + k.$$

(1,5) b) $\displaystyle\int x\,\text{arctg}\,(\sqrt{x^2-1})\,dx \underset{\downarrow}{=} \frac{x^2}{2}\text{arctg}\,(\sqrt{x^2-1}) - \frac{1}{2}\int \frac{x}{\sqrt{x^2-1}}\,dx \underset{\downarrow}{=}$

$$\boxed{\begin{array}{cc} u = \text{arctg}\,(\sqrt{x^2-1}) & du = \frac{1}{x\sqrt{x^2-1}}dx \\ dv = x\,dx & v = \frac{x^2}{2} \end{array}} \qquad \boxed{\begin{array}{c} u = x^2-1 \\ du = 2x\,dx \end{array}}$$

$$= \frac{x^2}{2}\text{arctg}\,(\sqrt{x^2-1}) - \frac{1}{2}\int \frac{1}{2\sqrt{u}}\,du = \frac{x^2}{2}\text{arctg}\,(\sqrt{x^2-1}) - \frac{1}{2}\sqrt{u} + k =$$

$$= \frac{x^2}{2}\text{arctg}\,(\sqrt{x^2-1}) - \frac{1}{2}\sqrt{x^2-1} + k.$$