

$$\textcircled{2} \quad \int 2x \operatorname{arctg} x \, dx = \left| \begin{array}{l} u = \operatorname{arctg} x \\ v' = 2x \end{array} \right. \quad \left. \begin{array}{l} u' = \frac{1}{1+x^2} \\ v = 2 \frac{x^2}{2} = x^2 \end{array} \right| =$$

$$= \operatorname{arctg} x \cdot x^2 - \int \frac{x^2}{1+x^2} dx =$$

$$= x^2 \cdot \operatorname{arctg} x - \int \frac{(x^2+1)-1}{x^2+1} dx =$$

$$= x^2 \operatorname{arctg} x - \int \left( 1 - \frac{1}{x^2+1} \right) dx =$$

$$= \underline{\underline{x^2 \operatorname{arctg} x - x + \operatorname{arctg} x + c}}$$