3. $\int \frac{x\,dx}{\sqrt{1+x^2}} = \frac{1}{2}\int \frac{d(1+x^2)}{\sqrt{1+x^2}} = \frac{1}{2}\cdot\frac{1}{1/2}\cdot\sqrt{1+x^2}+C$

$$\int \frac{\sin 2x}{\sqrt[3]{\cos 2x}}\,dx = \frac{1}{2}\int \frac{\sin 2x}{\sqrt[3]{\cos 2x}}\,d(2x) =$$

$$= -\frac{1}{2}\int \frac{d(\cos 2x)}{\sqrt[3]{\cos 2x}} = -\frac{1}{2}\int (\cos 2x)^{-1/3}\,d(\cos 2x) =$$

$$= -\frac{1}{2}\,\frac{(\cos 2x)^{2/3}}{\frac{2}{3}} + C = -\frac{3}{4}\sqrt[3]{\cos^2(2x)} + C$$

$\int \ln(1+x^2)\,dx = \Bigg[$ Берем интеграл по частям:
$u = \ln(1+x^2)$ $\quad dv = dx$
$du = \frac{2x}{1+x^2}$ $\quad v = x$
$\int u\,dv = u\cdot v - \int v\,du$ $\Bigg]$

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

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

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

$$- 2x + 2\,\mathrm{arctg}(x) + C$$