(а) $\int \frac{\sqrt{\operatorname{arc\,tg} x}}{1+x^2}\,dx$

S(V(arctgx)/(1+x^2))dx=S(V(arctgx))d(arctgx)=
=[t=arctgx]=SVt dt=St^(1/2)dt=2tVt/3+C=2arctgxVarctgx/3+C
arctgx’=1/(1+x^2)

(б) $\int \frac{e^x\,dx}{e^{2x}+1}$

S(e^xdx/(e^2x+1))=S(e^xdx/((e^x)^2+1))=
=S(1d(e^x)/((e^x)^2+1))=[t=e^x]=S(dt/(t^2+1))=
=arctgt+C=arctg(e^x)+C

(в) $\int \operatorname{tg}\frac{1}{x}\cdot\frac{dx}{x^2}$

S(tg(1/x)*dx/x^2)=-S(tg(1/x)*d(1/x))=[t=1/x]=
=-S(tg(t)*d(t))=-S(sint/cost)d(t)=-S(-1/cost)dcost=[u=cost]=
=-S(-1/u)d(u)=ln|u|+C=ln|cos(1/x)|+C