Formule de derivare a functiilor compuse

Daca u: $D \to E$ si g: $E \to R$ sunt derivabile pe domeniile lor de definitie atunci $g \circ u : D \to R$ este derivabila pe D si $(g \circ u)' = g'(u(x)) \cdot u'(x)\ \forall x \in D$.

Tabloul derivatelor functiilor compuse $g(u(x)): D \to R$

Functia	Derivata functiei	Domeniul de derivabilitate D
u	u'	
$u^n,\ n \in N^*$	$(u^n)' = n \cdot u^{n-1} \cdot u'$	
$u^r,\ r \in R$	$(u^r)' = r \cdot u^{r-1} \cdot u'$	$\{x \in R \mid u(x) > 0\}$
$\sqrt{u}$	$(\sqrt{u})' = \frac{u'}{2\sqrt{u}}$	$\{x \in R \mid u(x) > 0\}$
$\sqrt[2n]{u}$	$(\sqrt[2n]{u})' = \frac{1}{2n\sqrt[2n]{u^{2n-1}}}$	$\{x \in R \mid u(x) > 0\}$
$\sqrt[2n+1]{u}$	$(\sqrt[2n+1]{u})' = \frac{1}{(2n+1)\sqrt[2n+1]{u^{2n}}}$	$\{x \in R \mid u(x) > 0\}$
e^u	$(e^u)' = e^u \cdot u'$	
$a^u,\ a > 0,\ a \neq 1$	$(a^u)' = a^u \cdot u' \cdot \ln a$	
$\ln u$	$(\ln u)' = \frac{u'}{u}$	
$\log_a u,\ a>0,\ a \neq 1$	$(\log_a u)' = \frac{u'}{u \ln a}$	$\{x \in R \mid u(x) > 0\}$
$\sin u$	$(\sin u)' = u' \cos u$	
$\cos u$	$(\cos u)' = -u' \sin u$	
$\mathrm{tg}\, u$	$(\mathrm{tg}\, u)' = \frac{u'}{\cos^2 u}$	$\{x \in R \mid u(x) \neq \frac{\pi}{2} + k\pi\}$
$\mathrm{ctg}\, u$	$(\mathrm{ctg}\, u)' = \frac{-u'}{\sin^2 u}$	$\{x \in R \mid u(x) \neq k\pi\}$
$\arcsin u$	$(\arcsin u)' = \frac{u'}{\sqrt{1-u^2}}$	$\{x \in R \mid -1 \leq u(x) \leq 1\}$
$\arccos u$	$(\arccos u)' = \frac{-u'}{\sqrt{1-u^2}}$	$\{x \in R \mid -1 \leq u(x) \leq 1\}$
$\mathrm{arctg}\, u$	$(\mathrm{arctg}\, u)' = \frac{u'}{u^2+1}$	
$\mathrm{arcctg}\, u$	$(\mathrm{arcctg}\, u)' = \frac{-u'}{u^2+1}$	