



ICE - The Chain Rule

Calculate the derivatives of the functions given in the table below.

Function	Derivative
$f(x) = (1 + x^2)^7$	
$f(x) = \sqrt{1 + 3^x}$	
$h(t) = e^{t^2+t}$	
$l(z) = \frac{z}{(z^3 + 1)}$	
$q(s) = \sqrt{1 + e^{2s}}$	
$u(z) = \frac{1}{e^{1+3z^2}}$	
$v(t) = \left(t^{\frac{5}{2}} - \sqrt{t}\right)^\pi$	
$m(z) = (2^z + z^2)^{-1}$	

Answers: (a) $7*(1 + x^2)^6*2x$. (b) $0.5*(1 + 3^x)^{-0.5}*\ln(3)*3^x$. (c) $e^{t^2+t}*(2t + 1)$.
(d) $[z^3 + 1 - z*3z^2]/(z^3 + 1)^2$. (e) $0.5*(1 + e^{2s})^{-0.5}*2e^{2s}$. (f) 0.
(g) $\pi*(t^{5/2} - t^{1/2})^{\pi-1}*(2.5*t^{1.5} - 0.5*t^{0.5})$. (h) $-1*(2^z + z^2)^{-2}*(\ln(2)*2^z + 2z)$.