CHAIN RULE: $[p(q(x))]' = p'(q(x)) \cdot q'(x)$

$f(x) = x^2+1 \qquad g(x) = \sin x \qquad h(x) = \sqrt[3]{x}$

example:

$f(g(x))$ •	• $(\sqrt[3]{x})^2+1$
$f(h(x))$ •	• $\sin(\sqrt[3]{x})$
$g(f(x))$ •	• $\sqrt[3]{\sin x}$
$g(h(x))$ •	• $(\sin^2 x)+1$
$h(f(x))$ •	• $\sin(x^2+1)$
$h(g(x))$ •	• $\sqrt[3]{x^2+1}$

example:

$f'(x)$ •	• $\cos x$
$g'(x)$ •	• $2\sin x$
$h'(x)$ •	• $\cos(x^2+1)$
$f'(g(x))$ •	• $\dfrac{1}{3\sqrt[3]{(x^2+1)^2}}$
$f'(h(x))$ •	• $\cos(\sqrt[3]{x})$
$g'(f(x))$ •	• $2x$
$g'(h(x))$ •	• $\dfrac{1}{3\sqrt[3]{x^2}}$
$h'(f(x))$ •	• $2\sqrt[3]{x}$
$h'(g(x))$ •	• $\dfrac{1}{3\sqrt[3]{\sin^2 x}}$

Use the results above to evaluate the following:

$[(\sqrt[3]{x})^2+1]' =$

$[\sin(\sqrt[3]{x})]' =$

$[\sqrt[3]{\sin x}]' =$

example: $[(\sin^2 x)+1]' = [f(g(x))]' = f'(g(x)) \cdot g'(x) = (\qquad)\cdot(\qquad)$

$[\sin(x^2+1)]'$

$[\sqrt[3]{x^2+1}]'$