

SOLUTION #4 (9 AM)

Solution 1. (1) *Not correct. $f(x) = |x|$ is continuous but not differentiable at $x = 0$. (2pts)*

(2) *Correct! (2pts)*

Solution 2. (1) $f'(x) = 3 \cdot 4(x^2 - 1)^3 \cdot (x^2 - 1)' = 12(x^2 - 1)^3 \cdot 2x$
 $= 24x(x^2 - 1)^3$ (2pts)

(2) $g'(x) = [(x + 3)^2]'\sqrt{4 - 3x} + (x + 3)^2(\sqrt{4 - 3x})'$
 $= 2(x + 3)\sqrt{4 - 3x} + (x + 3)^2 \frac{1}{2}(4 - 3x)^{-\frac{1}{2}}(-3)$
 $= 2(x + 3)\sqrt{4 - 3x} - \frac{3}{2}(x + 3)^2(4 - 3x)^{-\frac{1}{2}}$ (2pts)

(3) $h'(x) = \frac{1 \cdot (x^2 + 1) - x(x^2 + 1)'}{(x^2 + 1)^2} = \frac{(x^2 + 1) - x \cdot 2x}{(x^2 + 1)^2} = \frac{-x^2 + 1}{(x^2 + 1)^2}$ (2pts)