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## Chain Rule for differentiation of composite functions

Differentiate the following:

$y = (5x^3 - x + 1)^3$	$\frac{dy}{dx} = \frac{dy}{dt} \frac{dt}{dx}$
let $t = 5x^3 - x + 1$	$y = at^n$
$\therefore y = t^3$	$\frac{dy}{dt} = ant^{n-1}$

$\therefore \frac{dy}{dx} = 3(5x^3 - x + 1)^2 (15x^2 - 1)$

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$y = 5\sqrt{3x^2 + 4} = 5(3x^2 + 4)^{1/2}$

$\therefore \frac{dy}{dx} = \frac{5}{2} (3x^2 + 4)^{-1/2} (6x)$

$= \frac{30x}{2\sqrt{3x^2 + 4}}$

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$y = \frac{3}{2x-1} = 3(2x-1)^{-1}$

$\therefore \frac{dy}{dx} = -3(2x-1)^{-2} (2)$

$= -\frac{6}{(2x-1)^2}$

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$y = \frac{4}{\sqrt[3]{x^2-3}} = 4(x^2-3)^{-1/3}$

$\therefore \frac{dy}{dx} = -\frac{4}{3} (x^2-3)^{-4/3} (2x)$

$= -\frac{8x}{3(x^2-3)^{4/3}}$

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