

1.) Calculate $\frac{d}{dx} \frac{(2x-3)^6}{\sqrt{3-x^2}}$ = $\frac{\left[\frac{d}{dx} (2x-3)^6 \right] \sqrt{3-x^2} - (2x-3)^6 \frac{d}{dx} \sqrt{3-x^2}}{(\sqrt{3-x^2})^2}$: quotient rule.

= $\frac{6(2x-3)^5 (2) \sqrt{3-x^2} - (2x-3)^6 \left(\frac{-2x}{2\sqrt{3-x^2}} \right)}{3-x^2}$: chain rule twice.

2.) Calculate $\frac{d}{dx} \left[(2x-3)^{0.3} x^7 + \frac{1}{x} \right] =$

$\rightarrow = \left[\frac{d}{dx} (2x-3)^{0.3} \right] x^7 + (2x-3)^{0.3} \frac{d}{dx} (x^7) + \frac{d}{dx} \left(\frac{1}{x} \right)$

= $0.3 (2x-3)^{-0.7} (2) x^7 + 7x^6 (2x-3)^{0.3} - \frac{1}{x^2}$

unsimplified answer.

3.) Calculate $\frac{d}{dt} \left(\frac{2t^2}{\sqrt{2t^2+5t-1}} \right) =$ $\frac{4t \sqrt{2t^2+5t-1} - 2t^2 \left(\frac{4t+5}{2\sqrt{2t^2+5t-1}} \right)}{2t^2+5t-1}$

= $\frac{4t(2t^2+5t-1) - 2t^2(4t+5) \frac{1}{2}}{(2t^2+5t-1)^{3/2}}$

= $\frac{8t^3 + 20t^2 - 4t - (8t^3 - 10t^2) \frac{1}{2}}{(2t^2+5t-1)^{3/2}}$

= $\frac{4t^3 + 15t^2 - 4t}{(2t^2+5t-1)^{3/2}}$

← simplified answer.