$$\frac{d}{dx}[x^n] = n x^{n-1}$$

$$\frac{d}{dx}[u^n] = n u^{n-1} \cdot u'$$

u IS ANYTHING

1. $y = 5(x^2-3)^4$

$y' = 5 \cdot 4(x^2-3)^3 \cdot \frac{d}{dx}(x^2-3)$

$y' = 20(x^2-3)^3 \cdot 2x$

$y' = 40x(x^2-3)^3$

2. $y = \sqrt{x^2-4x+9}$

$y = (x^2-4x+9)^{\frac{1}{2}}$

$y' = \frac{1}{2}(x^2-4x+9)^{\frac{1}{2}-1} \cdot \frac{d}{dx}(x^2-4x+9)$

$= \frac{1}{2}(x^2-4x+9)^{-\frac{1}{2}} \cdot (2x-4)$

$= \frac{2x-4}{2(x^2-4x+9)^{1/2}}$

$= \frac{2(x-2)}{2(x^2-4x+9)^{1/2}}$

$= \frac{x-2}{(x^2-4x+9)^{1/2}}$

$= \frac{x-2}{\sqrt{x^2-4x+9}}$

3. $y = \sqrt[3]{\frac{1}{x^2-5}}$

$= \left(\frac{1}{x^2-5}\right)^{\frac{1}{3}}$

$= \left(\frac{1}{(x^2-5)^1}\right)^{\frac{1}{3}}$

$= [(x^2-5)^{-1}]^{\frac{1}{3}}$

$= (x^2-5)^{-\frac{1}{3}}$

$y' = -\frac{1}{3}(x^2-5)^{-\frac{1}{3}-1} \cdot \frac{d}{dx}(x^2-5)$

$y' = -\frac{1}{3}(x^2-5)^{-\frac{4}{3}} \cdot 2x$

$= \frac{-2x}{3(x^2-5)^{4/3}}$