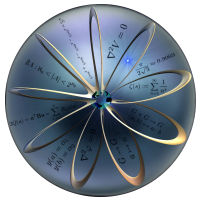

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sum rule

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The *sum rule* states that

$$\frac{\mathrm{d}}{\mathrm{d}x}\left[f(x)+g(x)\right]=f'(x)+g'(x)$$

Proof

See the `http://planetmath.org/ProofOfSumRule`proof of the sum rule.

Examples

$$\begin{aligned}\frac{\mathrm{d}}{\mathrm{d}x}(x+1) &= \frac{\mathrm{d}}{\mathrm{d}x}x+\frac{\mathrm{d}}{\mathrm{d}x}1=1\\ \frac{\mathrm{d}}{\mathrm{d}x}(x^2-3x+2) &= \frac{\mathrm{d}}{\mathrm{d}x}x^2+\frac{\mathrm{d}}{\mathrm{d}x}(-3x)+\frac{\mathrm{d}}{\mathrm{d}x}(2)=2x-3\\ \frac{\mathrm{d}}{\mathrm{d}x}(\sin x+\cos x) &= \frac{\mathrm{d}}{\mathrm{d}x}\sin x+\frac{\mathrm{d}}{\mathrm{d}x}\cos x=\cos x-\sin x\end{aligned}$$