

Watch. Practice. Understand. | Lesson 270

Calculus 3 2 Finding Derivatives By Product and Quotient Rule

Watch the matching video: <https://www.youtube.com/watch?v=DM0ZiBn-BIw>

Practice focus: Product and quotient rules

Original extra practice matched to the listed lesson topic.

Name: _____ Date: _____ Show your reasoning and check units.

01 Differentiate $y=(x^2+1)e^x$.

02 Differentiate $y=(x+1)/(x-1)$.

03 Differentiate $y=x^2 \sin x$.

04 A student writes $(fg)'=f'g'$. Correct the rule.

Worked answers | Lesson 270

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01 Differentiate $y=(x^2+1)e^x$.

Product rule: $y'=2xe^x+(x^2+1)e^x=e^x(x^2+2x+1)$.

02 Differentiate $y=(x+1)/(x-1)$.

Quotient rule gives $[(x-1)-(x+1)]/(x-1)^2 = -2/(x-1)^2$, $x \neq 1$.

03 Differentiate $y=x^2 \sin x$.

$y'=2x \sin x + x^2 \cos x$ by the product rule.

04 A student writes $(fg)'=f'g'$. Correct the rule.

The correct rule is $(fg)'=f'g+fg'$. Both factors contribute a term.