

Watch. Practice. Understand. | Lesson 328

Calculus 7 4 Partial Fraction Integration Part II

Watch the matching video: <https://www.youtube.com/watch?v=5D-dQe13pOo>

Practice focus: Integrating partial fractions

Original extra practice matched to the listed lesson topic.

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

01 Integrate $1/((x+1)(x+2)) \, dx$.

02 Integrate $(3x+5)/((x+1)(x+2)) \, dx$.

03 Integrate $1/(x^2-1) \, dx$.

04 Integrate $(x^2+1)/x \, dx$ for $x \neq 0$.

Worked answers | Lesson 328

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01 Integrate $1/((x+1)(x+2)) \, dx$.

Decompose into $1/(x+1) - 1/(x+2)$. Result $\ln|x+1| - \ln|x+2| + C$ on intervals avoiding $-1, -2$.

02 Integrate $(3x+5)/((x+1)(x+2)) \, dx$.

Decomposition $2/(x+1) + 1/(x+2)$ gives $2\ln|x+1| + \ln|x+2| + C$.

03 Integrate $1/(x^2-1) \, dx$.

Decomposition $(1/2)/(x-1) - (1/2)/(x+1)$. Result $(1/2)\ln|(x-1)/(x+1)| + C$.

04 Integrate $(x^2+1)/x \, dx$ for $x \neq 0$.

Divide first: $x + 1/x$. Integral $x^2/2 + \ln|x| + C$.