
Indefinite Integral Dominoes

Purpose. This activity is intended to give students practice with indefinite integrals. It may also be used to help students master derivatives/antiderivatives. You can keep sets in your classroom/office and students can also use them in place of flashcards.

Preparation (before class) and implementation (in class). This small group activity should take 15-20 minutes, depending on the class and the time reserved for follow-up discussion (if any). If it is used during class, we suggest using it prior to learning substitution, since the students can use what they know about derivatives to evaluate all of the integrals. It will then link nicely into a discussion about substitution.

There are twenty-four dominos in the set. Each domino includes an indefinite integral and an antiderivative. Each page should be printed on white paper or card stock and, if practical, laminated. Each domino should be cut along the solid lines, leaving the dashed lines intact.

In class, each small group should receive a shuffled set of dominos. They should then be instructed to organize the twenty-four dominos into a chain, in which the indefinite integral on one domino is matched with an antiderivative on the next domino in the chain.

It is expected that students will know several of the matches off the top of their heads, but some of them will require algebraic manipulations and such.

Suggested directions. If you wish to make this project as discovery-based as possible, you can distribute the activity, or have it waiting on students' tables as they come in, without instructions. Alternatively, you can introduce the project with directions like the following:

Leading questions and general ideas. As the students explore this activity, certain questions, like the following, may arise—or you may wish to bring them up to guide the students in their learning.

- What strategies did you use to match the integrals to the antiderivatives? Which integrals were easy to match, and which were more challenging? Why?
- Were there any errors that you made in computing solutions that you were able to identify and correct? Describe some of the errors that you or your group made.
- Did you notice any relationships among any of the integrals? Explain.
- Describe one or two strategies you found helpful to complete the chain.

Debrief. If possible, leave some time after the activity is completed for discussion that is more content-focused. This will provide students with the opportunity to understand how the explorations they have just completed apply to the “nuts and bolts” of the topic in question.

Some issues that might be discussed are:

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Follow-up challenge.