- Reminder: Test 3 is this Thursday.
- **Reminder:** Some office hours have moved around this week. Notably, I have office hours right after this lecture instead of on Thursday.
- Today's lecture will assume you have watched up to the end of playlist 9, and video 10.1.

For Thursday's lecture, please watch video 10.2.

$$\int \frac{\text{polynomial}}{(x+1)^3} \, dx.$$

Irreducible quadratics

In all of the previous exercises, the polynomials in the denominators were factored into products of linear functions. What about when you can't do that?

You saw a specific example of this in the videos. Now let's do it in general!

Problem. Let a < b be real numbers. Let f be a continuous, positive function defined on [a, b]. Let A be the region in the first quadrant bounded between the graph of f and the x-axis.

Find a formula for the volume of the solid of revolution obtained by rotating the region A around the x-axis.

Problem. Compute the volume of a pyramid with height H and square base with side length L.

Hint 1: Slice the pyramid (*like a carrot!*) with cuts parallel to the base.

Hint 2: You may need to think about similar triangles.