

A Partial Solution (Lecture Assignment)

Complete this assignment and submit it to Gradescope by 4:00pm on your class day. You can print this sheet, or write on your own paper. Contact us if internet connections or other issues require alternate arrangements.

1. **Review:** give a substitution which would allow you to compute each integral using the Substitution Rule (not IBP).

(a) $\int \frac{dx}{x+a} = \ln|x+a| + C$ (b) $\int \frac{x}{x^2+a} dx = \frac{1}{2} \ln|x^2+a| + C$ (c) $\int \frac{1}{x^2+a^2} dx = \frac{1}{a} \arctan\left(\frac{x}{a}\right) + C$

2. Use the formulas above to evaluate: $\int \frac{2}{x-1} + \frac{6x}{x^2+5} + \frac{4}{16+4x^2} dx$

3. In the UMTYMP Algebra textbook, partial fraction decompositions are covered in Section 11.6. In our Precalculus text, they're in Section 12.7. Grab one of those books (or some other resource) and review as needed for this problem.

(a) Factor the polynomial $x^2 + 2x - 3$:

(b) Compute $\int \frac{x-9}{x^2+2x-3} dx$.

One-Minute Questions: Write a sentence for each.

A. What's one mathematical question you have after watching the videos?

B. What's one interesting thing you learned from the book or videos?