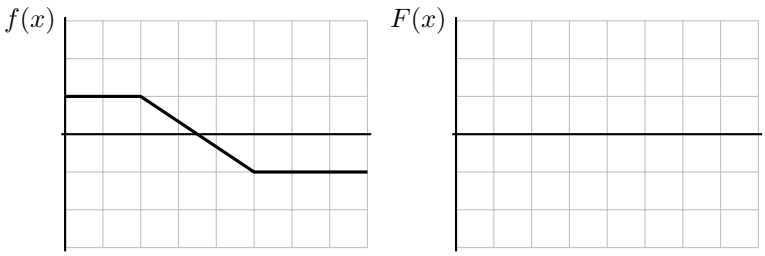
4.2/4.3 Handout

Tips:

- When choosing a u, try to find the most wrapped-up expression involving t or x.
- Don't forget to put your answer back in terms of the original variable.
- Sometimes, a little algebra before integrating goes a long way.
- Don't forget to check your answers!

1. Sketch the antiderivative of the following function assuming that $F(0) = -2$.



2. Compute the following integrals:

(a) $\displaystyle\int \left(x^2 + 9 - \frac{1}{x}\right) dx$

(b) $\displaystyle\int \left(\frac{12}{\sqrt{t}} - \frac{1}{\sqrt[3]{t^2}}\right) dt$

(c) $\displaystyle\int \sqrt{t}(t-5)\, dt$

(d) $\displaystyle\int \frac{x-1}{x^2}\, dx$

3. Compute more integrals!

(a) $\displaystyle\int xe^{x^2}\, dx$

(b) $\displaystyle\int \cos(3x)\, dx$

(c) $\int \cos^3(x)\sin(x)\,dx$

(d) $\int (4x+4)^{100}\,dx$

4. Even more integrals.

(a) $\int \dfrac{\sin(x)}{2+\cos(x)}\,dx$

(c) $\int \dfrac{\cos(\ln(x))}{x}\,dx$

(b) $\int \dfrac{\cos(x)}{\sin^2(x)}\,dx$

(d) $\int x\sqrt{2x+1}\,dx$