

Math 140 Worksheet Week 14

Week 14: U-Substitution and Logarithmic Integrals

Instructions. Write clear solutions on your own paper. Show enough work to justify your answers. Upload a single PDF of your work to Canvas.

In this worksheet, we practice integration by substitution and integrals that produce logarithmic functions.

1. Evaluate

$$\int x^2 \sqrt{x-1} \, dx.$$

2. Evaluate

$$\int_0^{\pi/2} \cos^3(x) \, dx.$$

3. Evaluate

$$\int \frac{1}{4+x^2} \, dx.$$

4. Evaluate

$$\int_0^2 \frac{3x+5}{x^2+2x-3} \, dx.$$

5. Evaluate

$$\int_{\pi/4}^{\pi/2} \cot(x) \, dx.$$

6. Evaluate

$$\int_1^e \frac{1}{x(\ln x)^2} \, dx.$$