Spring 2012
MA 10: Integration

For each of the following problems, identify the required integration technique or type of integral, then evaluate it. Possible techniques/types include, but are not limited to (1) “u-substitution”, (2) integration by parts, (3) trigonometric integrals, (4) integration by partial fractions, or a combination of two methods. Use integral tables ONLY TO CHECK YOUR WORK. Use the simplest method that works (don’t use a machete if a butter knife will do).

1. \[ \int_{0}^{1} \frac{x}{x^2 + 49} \, dx \]

2. \[ \int_{1}^{e} \frac{\ln(x)}{x^2} \, dx \]

3. \[ \int \cos^{42}(x) \sin^{3}(x) \, dx \]

4. \[ \int \frac{2x + 1}{x^2 - 7x + 12} \, dx \]

5. \[ \int x \sqrt{x^2 - 9} \, dx \]

6. \[ \int \cos^{42}(x) \sin(x) \, dx \]

7. \[ \int \cos(\sqrt{x}) \, dx \]

8. \[ \int \frac{\sqrt{x}}{x^2 + x} \, dx \]