

MATH 141 WORKSHEET 10

Show all work for full credit.

1. Evaluate the integral.

$$\int \frac{x^2 + 2x + 1}{(x^3 + 3x^2 + 3x + 1)^4} dx$$

2. Evaluate the integral.

$$\int \sec^2(5x) \tan^2(5x) dx$$

3. Evaluate the integral.

$$\int \frac{(x^2 + 1)^2}{2x} dx$$

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4. Evaluate the integral.

$$\int \frac{7x}{\sqrt{3x^2 + 4}} dx$$

5. Evaluate the integral.

$$\int \frac{\sin x}{1 + \cos^2 x} dx$$

6. Evaluate the integral.

$$\int \sec^4(2x) \tan(2x) dx$$

7. Evaluate the integral.

$$\int x^2 \sin(x^3) \cos(x^3) dx$$

8. Evaluate the integral.

$$\int 5^{x^2+2x+1} (x+1) dx$$

9. Evaluate the integral.

$$\int \frac{4x+10}{x^2+5x+6} dx$$

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10. Evaluate the integral.

$$\int (x + 2)^{20}(x + 5) dx$$

11. Evaluate the integral.

$$\int (x^2 + 1 + x \sec^2(x^2 + 1)) dx$$

12. Evaluate the integral.

$$\int_1^4 \frac{5}{\sqrt{x}(\sqrt{x} + 1)^3} dx$$

13. Evaluate the integral.

$$\int_{-1}^2 (x^4 - 3x^2 + 1) dx$$

14. Evaluate the integral.

$$\int_{\pi/6}^{\pi/2} \cos^2 x \sin x dx$$

15. Solve the initial-value problem. Find $f(x)$ if:

$$\begin{aligned} f''(x) &= 6x^2 - 18x + 5 \\ f(2) &= -5 \text{ and } f(1) = 3 \end{aligned}$$