

U-Substitution Problems

SPRING 2002

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Name _____

1. $\int e^{5x^2} x dx =$

(a) Ans: $\frac{1}{10}e^{5x^2} + C$

2. $\int e^{8x} dx =$

(a) Ans: $\frac{1}{8}e^{8x} + C$

3. $\int e^{3x^4} x^3 dx =$

(a) Ans: $\frac{1}{12}e^{3x^4} + C$

4. $\int e^{2x^5-7x} (20x^4 - 14) dx =$

(a) Ans: $2e^{2x^5-7x} + C$

5. $\int e^{3x^2} 5x dx =$

(a) Ans: $\frac{5}{6}e^{3x^2} + C$

6. $\int (x^2 + 1)^6 8x dx =$

(a) Ans: $\frac{4}{7}(x^2 + 1)^7 + C$

7. $\int (2x^3 - 3x^2 + 5)^{10} (x^2 - x) dx =$

(a) Ans: $\frac{1}{66}(2x^3 - 3x^2 + 5)^{11} + C$

8. $\int (2x^4 + 3x^2)^5 (24x^3 + 18x) dx =$

(a) Ans: $\frac{1}{2}(2x^4 + 3x^2)^6 + C$

9. $\int \frac{1}{8x-5} dx =$

(a) Ans: $\frac{1}{8} \ln |8x - 5| + C$

10. $\int \frac{5}{2x+3} dx =$

(a) Ans: $\frac{5}{2} \ln |2x + 3| + C$

11. $\int \frac{x}{x^2-3} dx =$

(a) Ans: $\frac{1}{2} \ln |x^2 - 3| + C$

12. $\int \frac{3x+1}{3x^2+2x-1} dx =$

(a) Ans: $\frac{1}{2} \ln |3x^2 + 2x - 1| + C$

13. $\int \frac{15x^2+10x+5}{x^3+x^2+x+1} dx =$

(a) Ans: $5 \ln |x^3 + x^2 + x + 1| + C$