

Integration - Practice Exercises #1

Pat Rossi

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Instructions Do problems 1 - 6 by inspection.

1. $\int \sin(3x) dx =$

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

3. $\int \sec^2(4x) dx =$

4. $\int \sec(8x) \tan(8x) dx =$

5. $\int \cos\left(\frac{9x}{5}\right) dx =$

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

For problems 7-10, use u-substitution to solve.

7. $\int (3x^4 + 6x)^{10} (4x^3 + 2) dx =$

8. $\int e^{\cos(x)} \sin(x) dx =$

9. $\int \frac{1}{5x^2+2x} (5x+1) dx =$

10. $\int \sec(3x) \tan(3x) dx =$

For problems 11 - 15, use integration by parts to solve.

11. $\int x e^{-x} dx =$

12. $\int x \cos(5x) dx =$

13. $\int x^2 \ln(x) dx =$

14. $\int x \tan^{-1}(x) dx =$

15. $\int e^x \sin(x) dx =$

For problems 16 - 19, solve by using partial fraction decomposition.

16. $\int \frac{5x-12}{x(x-4)} dx =$

17. $\int \frac{37-11x}{(x+1)(x-2)(x-3)} dx =$

18. $\int \frac{6x-11}{(x-1)^2} dx =$

19. $\int \frac{x^6-x^3+1}{x^4+9x^2} dx =$

Do the rest by any means you can.

20. $\int \frac{4x}{5x^2+1} dx =$

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

22. $\int \frac{e^x}{e^x+1} dx =$