

HW 5.2

Find the indefinite integral.

$$3. \int \frac{1}{x+1} dx$$

$$15. \int \frac{x^3 - 3x^2 + 5}{x-3} dx$$

$$6. \int \frac{1}{3x+2} dx$$

$$18. \int \frac{x^3 - 3x^2 + 4x - 9}{x^2 + 3} dx$$

$$9. \int \frac{x^2 - 4}{x} dx$$

$$21. \int \frac{1}{\sqrt{x+1}} dx$$

$$12. \int \frac{x(x+2)}{x^3 + 3x^2 - 4} dx$$

$$24. \int \frac{x(x-2)}{(x-1)^3} dx$$

Find the indefinite integral by u-substitution. (Hint: Let u be the denominator of the integrand.)

$$26. \int \frac{1}{1 + \sqrt{3x}} dx$$

$$27. \int \frac{\sqrt{x}}{\sqrt{x}-3} dx$$

Find the indefinite integral.

$$30. \int \tan 5\theta d\theta$$

$$36. \int (\sec t + \tan t) dt$$

$$33. \int \frac{\cos t}{1 + \sin t} dt$$

Solve the differential equation.

$$38. \frac{dy}{dx} = \frac{2x}{x^2 - 9}$$

$$39. \frac{ds}{d\theta} = \tan 2\theta$$

Find the definite integral.

$$48. \int_{-1}^1 \frac{1}{x+2} dx$$

$$51. \int_0^2 \frac{x^2 - 2}{x+1} dx$$

Find the average value of the function over the given interval.

$$89. f(x) = \frac{\ln x}{x}, [1, e]$$