

6.1 Basic Theory of Linear Differential Equations

Name:

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P 17. Verify that the given functions form a fundamental solution set for the given differential equation.

$$x^3y''' - 3x^2y'' + 6xy' - 6y = 0, \quad x > 0; \quad \{x, x^2, x^3\}.$$

P 20. A particular solution and a fundamental solution are given for a nonhomogeneous equation and its corresponding homogeneous equation. (a) Find a general solution to the nonhomogeneous equation. (b) Find the solution that satisfies the specified initial conditions.

$$xy''' - y'' = -2; y(1) = 2, y'(1) = -1, y''(1) = -4; y_p = x^2; \{1, x, x^3\}$$