

23. The functions satisfy the differential equation and are linearly independent since

$$W(e^{-3x}, e^{4x}) = 7e^x \neq 0$$

for $-\infty < x < \infty$. The general solution is

$$y = c_1e^{-3x} + c_2e^{4x}.$$

27. The functions satisfy the differential equation and are linearly independent since

$$W(x^3, x^4) = x^6 \neq 0$$

for $0 < x < \infty$. The general solution on this interval is

$$y = c_1x^3 + c_2x^4.$$

31. The functions $y_1 = e^{2x}$ and $y_2 = e^{5x}$ form a fundamental set of solutions of the associated homogeneous equation, and $y_p = 6e^x$ is a particular solution of the nonhomogeneous equation.

33. The functions $y_1 = e^{2x}$ and $y_2 = xe^{2x}$ form a fundamental set of solutions of the associated homogeneous equation, and $y_p = x^2e^{2x} + x - 2$ is a particular solution of the nonhomogeneous equation.