

10.5.2.7

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Question: Consider the second-order linear differential equation

$$x^2 \frac{d^2 y}{dx^2} + x \frac{dy}{dx} - y = 0, \quad x \geq 1$$

with the initial conditions

$$y(x = 1) = 6, \quad \left. \frac{dy}{dx} \right|_{x=1} = 2.$$

Then the value of y at $x = 2$ is _____.
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Solution