

## Supplemental Exercises for Section 9.1

Solve each of the following initial value problems explicitly for the unknown function  $y$ .

1.  $\frac{dy}{dx} = \frac{1}{y}$ ,  $y(0) = -3$

2.  $\frac{dy}{dx} = \frac{1}{3}x^2\sqrt{1-y^2}$ ,  $y(0) = -\frac{\sqrt{2}}{2}$

3.  $\frac{dy}{dx} = \frac{1}{y}$ ,  $y(0) = -2$

4.  $\frac{dy}{dx} = y^2e^x$ ,  $y(0) = 2$

5.  $\frac{dy}{dx} = xe^y$ ,  $y(0) = 3$

6.  $\frac{dy}{dx} = \frac{\sin x}{y}$ ,  $y(0) = -1$

Selected Answers

2.  $y = \sin\left(\frac{1}{9}x^3 - \frac{\pi}{4}\right)$

4.  $y = \frac{1}{\frac{3}{2} - e^x}$

5.  $y = -\ln\left(-\frac{1}{2}x^2 + e\right)$