**1.** Solving $-1/3 = 1/(1+c_1)$ we get $c_1 = -4$. The solution is $y = 1/(1-4e^{-x})$.

**3.** Letting $x = 2$ and solving $1/3 = 1/(4+c)$ we get $c = -1$. The solution is $y = 1/(x^2-1)$. This solution is defined on the interval $(1, \infty)$.

*In Problems 7–10 we use $x = c_1 \cos t + c_2 \sin t$ and $x' = -c_1 \sin t + c_2 \cos t$ to obtain a system of two equations in the two unknowns $c_1$ and $c_2$.*

**7.** From the initial conditions we obtain the system

$$c_1 = -1$$

$$c_2 = 8.$$

The solution of the initial-value problem is $x = -\cos t + 8 \sin t$.

**17.** For $f(x,y) = y^{2/3}$ we have $\dfrac{\partial f}{\partial y} = \dfrac{2}{3}y^{-1/3}$. Thus, the differential equation will have a unique solution in any rectangular region of the plane where $y \neq 0$.

**19.** For $f(x,y) = \dfrac{y}{x}$ we have $\dfrac{\partial f}{\partial y} = \dfrac{1}{x}$. Thus, the differential equation will have a unique solution in any region where $x \neq 0$.

*In Problems 35–38 we consider the points on the graphs with $x$-coordinates $x_0 = -1$, $x_0 = 0$, and $x_0 = 1$. The slopes of the tangent lines at these points are compared with the slopes given by $y'(x_0)$ in (a) through (f).*

**35.** The graph satisfies the conditions in (b) and (f).

*In Problems 35–38 we consider the points on the graphs with $x$-coordinates $x_0 = -1$, $x_0 = 0$, and $x_0 = 1$. The slopes of the tangent lines at these points are compared with the slopes given by $y'(x_0)$ in (a) through (f).*

**36.** The graph satisfies the conditions in (e).

*In Problems 35–38 we consider the points on the graphs with $x$-coordinates $x_0 = -1$, $x_0 = 0$, and $x_0 = 1$. The slopes of the tangent lines at these points are compared with the slopes given by $y'(x_0)$ in (a) through (f).*

**37.** The graph satisfies the conditions in (c) and (d).

*In Problems 35–38 we consider the points on the graphs with $x$-coordinates $x_0 = -1$, $x_0 = 0$, and $x_0 = 1$. The slopes of the tangent lines at these points are compared with the slopes given by $y'(x_0)$ in (a) through (f).*

**38.** The graph satisfies the conditions in (a).