Calculus AB
Name_____

Worksheet 21 - Separable Differential Equations

Period_____

Find the general solution of each differential equation.

1) $\dfrac{dy}{dx} = \dfrac{2x}{e^{2y}}$

2) $\dfrac{dy}{dx} = \dfrac{3e^x}{y^2}$

3) $\dfrac{dy}{dx} = 12x^3 y$

4) $\dfrac{dy}{dx} = \dfrac{y+1}{x}$

5) $\dfrac{dy}{dx} = \dfrac{2xy}{x^2 + 2}$

For each problem, find the particular solution of the differential equation that satisfies the initial condition.

6) $\dfrac{dy}{dx} = \dfrac{x^3}{y^2}$, $y(0) = \sqrt[3]{2}$

7) $\dfrac{dy}{dx} = 2e^{x-y}$, $y(-3) = \ln \dfrac{3e^3 + 2}{e^3}$

8) $\dfrac{dy}{dx} = 4x^3 y$, $y(1) = -e$

9) $\dfrac{dy}{dx} = \dfrac{3 + x^2}{y^2}$, $y(2) = \sqrt[3]{26}$

10) $\dfrac{dy}{dx} = 3x^2 y$, $y(-3) = \dfrac{1}{e^{27}}$