Diiferentials General Solutions Worksheet 1

Date_____ Period____

Find the general solution of each differential equation.

1) $\frac{dy}{dx} = 3e^{x-y}$

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

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

4) $\frac{dy}{dx} = -\frac{1}{\sin y}$

5) $\frac{dy}{dx} = \frac{-1 + x^2}{y^2}$

6) $\frac{dy}{dx} = \frac{2x^2}{y^2}$

7) $\frac{dy}{dx} = \frac{e^{x}}{y^2}$

8) $\frac{dy}{dx} = \frac{x^2}{e^{2y}}$

9) $\frac{dy}{dx} = xe^{y}$

10) $\frac{dy}{dx} = \frac{-2 + x^2}{y^2}$

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

12) $\frac{dy}{dx} = \frac{-3 + x^2}{y^2}$

13) $\frac{dy}{dx} = \frac{x}{e^{y}}$

14) $\frac{dy}{dx} = \frac{1}{\cos y}$

Answers to Diiferentials General Solutions Worksheet 1 (ID: 1)

1) $e^y = 3e^x + C$
$y = \ln\left(3e^x + C\right)$

2) $e^y = x^2 + C$
$y = \ln\left(x^2 + C\right)$

3) $\frac{y^3}{3} = \frac{x^4}{4} + C_1$
$y = \sqrt[3]{\frac{3x^4}{4} + C}$

4) $\cos y = x + C$
$y = \cos^{-1}\left(x + C\right)$

5) $\frac{y^3}{3} = -x + \frac{x^3}{3} + C$
$y = \sqrt[3]{x^3 - 3x + C}$

6) $\frac{y^3}{3} = \frac{2x^3}{3} + C_1$
$y = \sqrt[3]{2x^3 + C}$

7) $\frac{y^3}{3} = e^x + C_1$
$y = \sqrt[3]{3e^x + C}$

8) $\frac{e^{2y}}{2} = \frac{x^3}{3} + C_1$
$y = \frac{\ln\left(\frac{2x^3}{3} + C\right)}{2}$

9) $-e^{-y} = \frac{x^2}{2} + C_1$
$y = -\ln\left(-\frac{x^2}{2} + C\right)$

10) $\frac{y^3}{3} = -2x + \frac{x^3}{3} + C_1$
$y = \sqrt[3]{x^3 - 6x + C}$

11) $\frac{e^{2y}}{2} = x^3 + C_1$
$y = \frac{\ln\left(2x^3 + C\right)}{2}$

12) $\frac{y^3}{3} = -3x + \frac{x^3}{3} + C_1$
$y = \sqrt[3]{x^3 - 9x + C}$

13) $e^y = \frac{x^2}{2} + C$
$y = \ln\left(\frac{x^2}{2} + C\right)$

14) $\sin y = x + C$
$y = \sin^{-1}\left(x + C\right)$