

Lesson 7.7 Separable Differential Equations

Which of the following is a separable differential equation: *

(1 Point)

choose all the correct answers

☐ $y' = \frac{x^3 - 5x}{e^x}$

☐ $y' = \sin(3x - 2y)$

☐ $y' = \sin y \ln x$

☐ $y' = 2^{y-x}$

☐ $y' = 2x + 3y + 5$

Given: *

(1 Point)

$y' = \cos^2 y$, Find the General Solution

☐ $y(x) = \tan^{-1}(x + c)$

☐ $y(x) = \tan^{-1} x + c$

☐ $y(x) = c \tan^{-1} x$

☐ $y(x) = \sec^2 x + c$

Given: *

(1 Point)

$y' = (x + 5)(x + 2)$, Find the General Solution

☐ $y = \frac{x^3}{3} + \frac{7x^2}{2} + 10x + c$

☐ $y = \ln(x + 5) + \ln(x + 2) + c$

☐ $y = x^2 + 7x + 10$

☐ $x^3 + 7x^2 + 10x + c$

Solve the initial value problem *

(1 Point)

$$y' = xy^2, y(2) = -\frac{2}{5}$$

☐ $y(x) = -\frac{2}{x^2+5}$

☐ $y(x) = \frac{2}{x^2+1}$

☐ $y(x) = -\frac{2}{x^2+1}$

☐ $y(x) = \frac{2}{x^2+5}$

Solve the initial value problem: *

(1 Point)

$$y' = e^{x-y}, y(1) = \ln(2e + 1)$$

☐ $y(x) = \ln(e^x + 1)$

☐ $y(x) = \ln(2e^{x+1} + 1)$

☐ $y(x) = \ln(2e^x + 1)$

☐ $2e^x + 1$
