

ODE number: 1

$$dxx y(x) + dx (x + 1) \frac{d}{dx} y(x) = 0$$

Solution:

$$y(x) = C (x + 1) e^{-x}$$

CORRECT

ODE number: 2

$$x \frac{d}{dx} y(x) - 2y(x) = bx^3 y^2(x)$$

Solution:

$$y(x) = \frac{5x^2}{C - bx^5}$$

CORRECT

ODE number: 3

$$dxx y(x) + dx (x + 1) \frac{d}{dx} y(x) = 0$$

Solution:

$$y(x) = C (x + 1) e^{-x}$$

CORRECT

ODE number: 4

$$x \frac{d}{dx} y(x) - 2y(x) = bx^3 y^2(x)$$

Given solution:

$$y(x) = \frac{5x^2}{C + x^5}$$

is INCORRECT

The correct one is:

$$y(x) = \frac{x^2}{C_1 - \frac{bx^5}{5}}$$

ODE number: 5

$$\frac{d}{dx} y(x) = (9x + y(x) - 1)^2$$

Solution:

$$y(x) = -9x + -\frac{3 \sin (C - 3x)}{\cos (C - 3x)} + 1$$

CORRECT