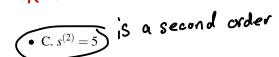
Assignment Math45-Module-01-Exercises due 09/02/2020 at 11:59pm PDT

1. (1 point) Select the following which are differential equations.

 $\forall A. y = x$ is an equation, but not a differential equation

XB. y''+3 is Not an equation



$$X = (y^3 - y^2 + y = 0)$$
 is not a DE (yz is y.y)

• G.
$$ln(y'') + sin(y') = e^y$$

$$\bullet \text{ H. } \frac{d^2y}{dx^2} - e^x \frac{dy}{dx} + \sin(x) = 2$$

$$\frac{dy}{dx} = 2y = 0, n = 1, a_0(x) = 1, a_1(x) = -2$$
and $a_1(x) = -2$

• J. None of the above

2. (1 point)

State what the independent and dependent variables are in the differential equation y'' + yx = 2x.

Independent variable: X
Dependent variable: Y

State what the independent and dependent variables are in the

differential equation $\frac{d^2x}{dy} = 15$. Independent variable: yDependent variable: y

Which of the following is NOT a correct partial derivative of the 4-variable function $g(x, y, z, w) = x^6 \ln(4y)e^{7z} \cos(4w)$.

• A.
$$\frac{\partial g}{\partial r} = 6x^5 \ln(4y)e^{7z} \cos(4w)$$

• B.
$$\frac{\partial g}{\partial w} = -4x^6 \ln(4y)e^{7z} \sin(4w)$$

• C.
$$\frac{\partial g}{\partial v} = \frac{x^6 e^{7z} \cos(4w)}{v}$$

4. (1 point)

Find the partial derivatives $\frac{\partial f}{\partial x}$ and $\frac{\partial f}{\partial y}$ for the function $f(x,y) = \sin(x^9 y^6).$

$$\frac{\partial f}{\partial x} = \underline{\qquad} \text{help (formulas)} \quad \text{CoS} \left(x^q y^6 \right) q x^8 y^6$$

$$\frac{\partial f}{\partial y} = \frac{\partial f}{\partial y} = \frac{\partial f}{\partial y} \left(\cos(x^{q}y^{6}) \chi^{q} 6 y^{5} \right)$$

5. (1 point) Select the following which are ordinary differential equations.

• A.
$$\frac{d^3y}{dx^3} - \sin(x)\frac{d^2y}{dx^2} + \ln(x) = \pi$$

• C.
$$\ln(y'') + e^{y'} = e^y$$

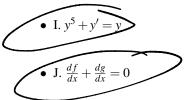
• D.
$$(y')^2 = y$$

XE. 2011 + 2015 = 5 Different Independing Variable

$$\mathbf{X} G. \frac{\partial^2 f}{\partial x^2} - \frac{\partial f}{\partial y} = 0$$

Different Independent variobles

XH. y"+x Not An Equation



K. None of the above

6. (1 point) Select the following which are linear differential equations.

- A. $x^{(57)} 2x''' + 3x = 0$
- B. $ln(y'') + e^{y'} = e^{y}$
- C. $\frac{df}{dx} + \frac{dg}{dx} = 0$
- D. $\frac{\partial^2 f}{\partial x^2} \frac{\partial f}{\partial y} = 0$
- E. $\frac{d^3y}{dx^3} \sin(x)\frac{d^2y}{dx^2} + \ln(x) = \pi$
- F. $v^5 + v' = v$
- G. y''' + x
- H. y' 2y = 3
- I. $(y')^2 = y$
- J. $\frac{\partial h}{\partial r} + \frac{\partial h}{\partial s} = 5$
- K. $\frac{\partial h}{\partial r} + \left(\frac{\partial h}{\partial s}\right)^4 = 5$
- L. None of the above
- 7. (1 point)

L=Linear, NL = Non-Linear O=Ordinary, P=Partial

7. (1 point) Differential equation with order

 $(1-x)y'' - 4xy' + 5y = \cos(x)$ is a ? ? ? 2 differential equation with $x\frac{d^3y}{dx^3} - \left(\frac{dy}{dx}\right)^4 = 0$ is a N. ? ? 3 differential equation with $\frac{\partial^2z}{\partial x^2} + \frac{\partial z}{\partial y} + y = \cos(x+y)$ is a ? ? ? 2 differential equation with $\frac{d^2y}{dx^2} = \sqrt{1 + \left(\frac{dy}{dx}\right)^2}$ is a N. ? ? 2 differential equation with $\frac{dy}{dx} = \frac{\cos(y)}{y}$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = 0$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = 0$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? 2 differential equation with $\frac{\partial^2z}{\partial x\partial y} + (xy)^2 = t^2$ is a N. ? 2 d

8. (1 point)

State the order of the given differential equations below.

$$x^{2} \frac{dy}{dx} = 9x \text{ has order: } \underline{1}$$

$$\frac{\partial^{4}g}{\partial r^{4}} - e^{r^{2}t^{3}} \frac{\partial^{3}g}{\partial y^{3}} = rt \text{ has order: } \underline{1}$$

$$\sin(y^{(7)}) + y' - 3x = 0 \text{ has order: } \underline{1}$$

$$x^{(6)} = x$$
 has order: ___6

9. (1 point)

Determine if the following differential equations are in differential form, normal form, or standard form.

- (a) The equation $e^{rs} dr s ds = 0$ is in
 - Choose
 - differential
 - normal
 - standard

form.

- (b) The equation $\frac{d^4f}{dx^4} e^x \frac{d^2f}{dx^2} x = 0$ is in
 - Choose
 - differential
 - normal
 - standard

form.

- (c) The equation y' = y 3 is in
 - Choose
 - differential
 - normal
 - standard

form.

(d) The equation $x''' - t^2x' + x = 0$ is in

- Choose
- differential
- normal
- $\bullet \ standard$

form.

- (e) The equation $\frac{dg}{ds} = \cos(s)g + s^2$ is in
 - Choose
 - differential
 - normal
 - $\bullet \ standard$

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form.

- (f) The equation $x^2 dx + y^2 dy = 0$ is in
 - Choose
 - differential
 - normal
 - \bullet standard

form.

10. (1 point)

Enter a value for π