Matthew Mendoza **Math-45-Krauel-F20**

Assignment Math45-Module-06-Exercises due 10/01/2020 at 11:59pm PDT

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1. (1 point) Are the following differential equations exact?

(a) [Choose/Exact/Not Exact] $\left(y^2+x^2\right)\dfrac{dy}{dx}+(2xy+1)=\dfrac{3}{x}-1.$

(b) [Choose/Exact/Not Exact] $(y+\cos(y)-\sin(x))\,dx+(x-x\sin(y))\,dy=0.$

(c) [Choose/Exact/Not Exact] $y\,dx+y\,dy=0.$

Answer(s) submitted:

- `Exact`
- `Exact`
- `Not Exact`

(correct)

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2. (1 point)

The following differential equation is exact.

Find a function $F(x,y)$ such that $F(x,y)=C$ is a solution to the differential equation

$$ydy-xdx=0.$$

$F(x,y)=$ _____

Given equation is $ydy - xdx = 0$

Hence, $ydy = xdx$

Integrating both sides we get $\dfrac{y^2}{2} = \dfrac{x^2}{2} + \dfrac{c}{2}$ where c is some constant

Thus we get

$y^2 - x^2 = c$

Hence, the required function is $F(x, y) = y^2 - x^2$

Answer(s) submitted:

- `((x^2)-(y^2))`

(correct)

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3. (1 point)

Solve the following differential equation:

$(y-x^5)dx+(x+y^5)dy=0.$

_____ = constant. help (formulas)

Answer(s) submitted:

- `xy+((y^6)/(6))-((x^6)/(6))`

(correct)

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4. (1 point)

Enter a value for π

_____

Answer(s) submitted:

- `pi`

(correct)