10. [4 points] An implicit curve is described by the equation

$$xy^n = \cos(ax)$$

where a and n are positive constants. Compute $\dfrac{dy}{dx}$. Your answer may include a and n. You must show every step of your work.

Answer: $\dfrac{dy}{dx} =$ _____

11. [8 points] The differentiable function $f(x)$ is defined for all real numbers. Additionally, $f(x)$ has **exactly two** critical points, at $x = 0$ and $x = 5$. A table of values of $f(x)$ is given below.

x	-2	1	3	7
$f(x)$	2	4	9	5

For parts **a.**–**d.**, circle **all** correct choices.

a. [2 points] On which of the following interval(s) must $f'(x)$ always be negative?

$(-2,0)$ $(0,1)$ $(1,5)$ $(5,7)$ NONE OF THESE

b. [2 points] On which of the following interval(s) must there be a point c for which $f'(c) = -1$?

$(-\infty, -2)$ $(-2,1)$ $(1,3)$ $(3,7)$ NONE OF THESE

c. [2 points] On the interval $[0,6]$, at which of the following point(s) does $f(x)$ attain its global maximum? If there is not enough information to determine this, circle NOT ENOUGH INFO.

$x = 0$ $x = 3$ $x = 5$ $x = 6$ NOT ENOUGH INFO

d. [2 points] On the interval $[-2,5]$, at which of the following point(s) does $f(x)$ attain its global minimum? If there is not enough information to determine this, circle NOT ENOUGH INFO.

$x = -2$ $x = 0$ $x = 2$ $x = 5$ NOT ENOUGH INFO