$f(0,2) = 0 - 2^2 = -4$, $f(0,-2) = 0 - (-2)^2 = -4$

So far, the two solns. give the same negative answer.

Go back to the partials, this time, F_y:

$$F_y = -2y(1-\lambda) = 0 \longrightarrow -2y = 0 \text{ or } 1-\lambda = 0$$

$$\boxed{y = 0} \qquad \lambda = 1$$

Subsitute $y = 0$ into the constraint:

$$x^2 + y^2 = 4 \longrightarrow x^2 + 0^2 = 4 \longrightarrow \boxed{x = \pm 2}$$

Test the two pts $(2,0)$ and $(-2,0)$ into $f(x,y)$ and compare to previous answers.

$f(2,0) = 2^2 - 0 = 4$, $f(-2,0) = (-2)^2 - 0 = 4$

Hence, both $(2,0)$ and $(-2,0)$ give the maximum $f(x,y)$. And $(0,2)$ and $(0,-2)$ give the minimum.