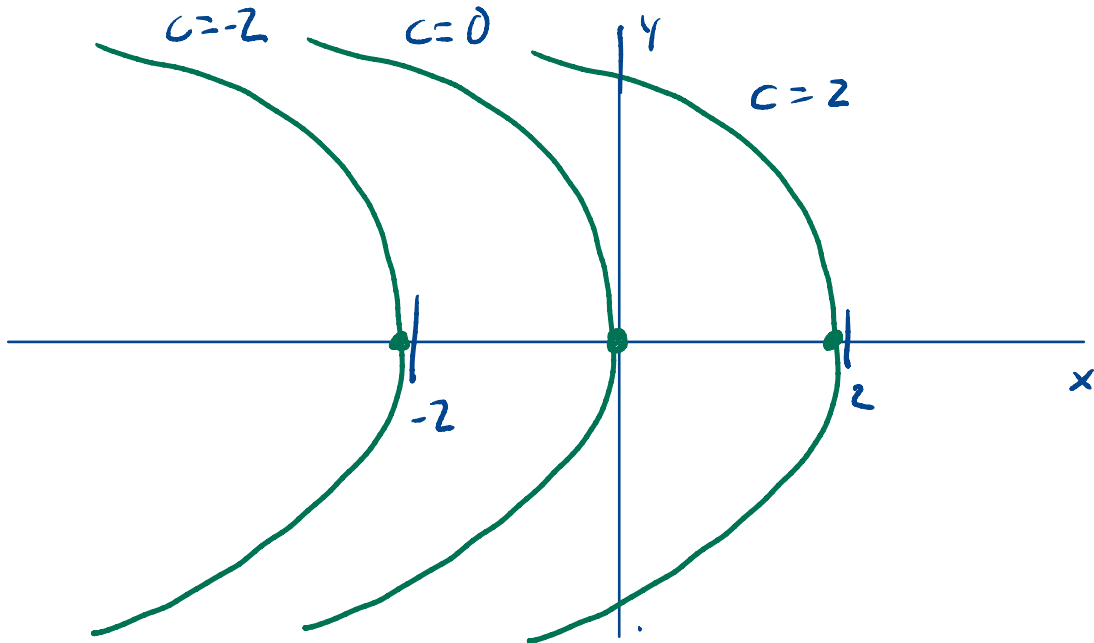


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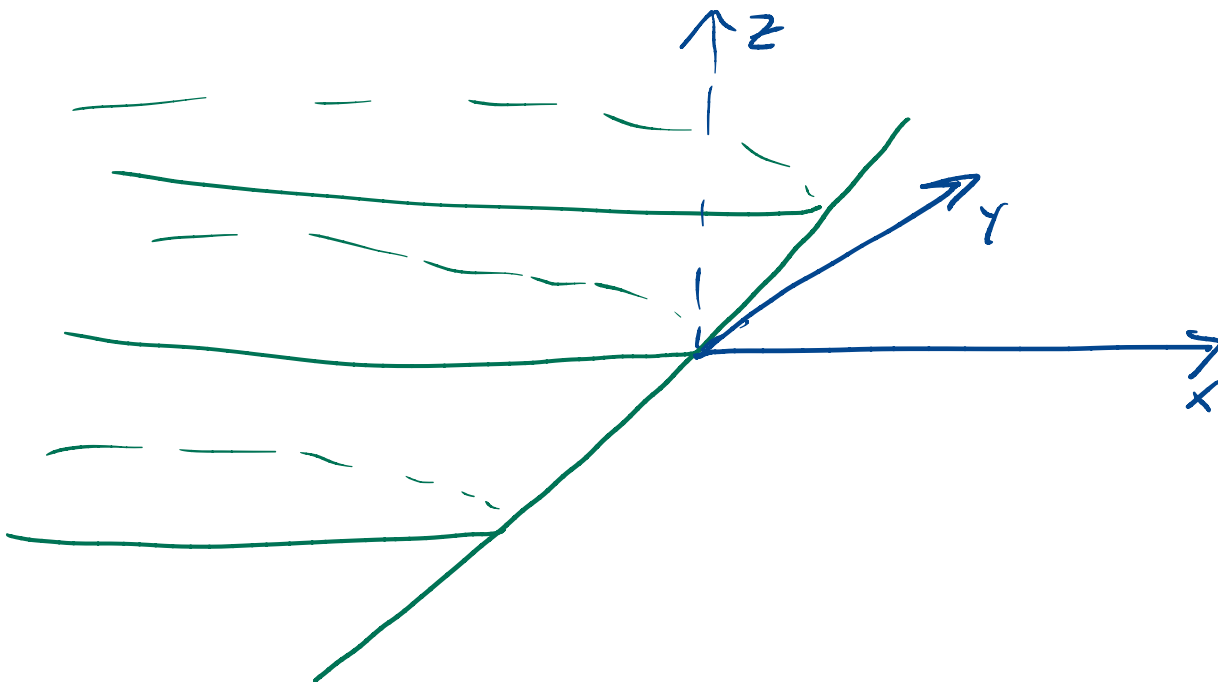
1. Consider the function

$$f(x, y) = x + y^2$$

Sketch the level curves for this function for the values $c = -2$, $c = 0$, and $c = 2$. Indicate clearly in your diagram which curves correspond to which values of c .



2. Sketch the graph of the function from the previous problem.



3. Consider the function

$$f(x, y) = \frac{xy}{2x^2 + 3y^2}.$$

- Is $(0, 0)$ in the domain of this function? Why or why not?

Not in domain: $\frac{0}{0}$

- What is the value of this function along the line $y = x$?

If $x \neq 0$, $f(x, x) = \frac{x^2}{2x^2 + 3x^2} = \frac{1}{5}$

- What is the value of this function along the line $y = 0$?

If $x \neq 0$, $f(x, 0) = \frac{x \cdot 0}{x^2 + 0^2} = 0$

- Either compute $\lim_{(x,y) \rightarrow (0,0)} f(x, y)$ or explain clearly why this limit doesn't exist.

The limit does not exist.

