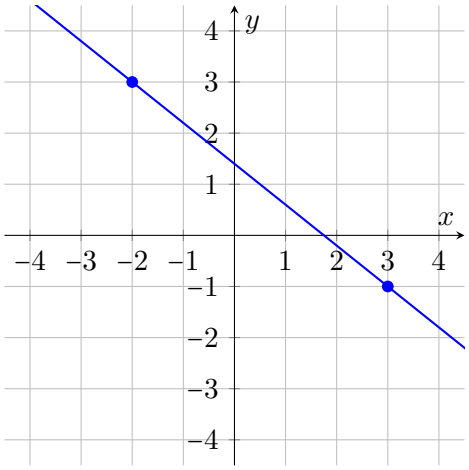
4. [11 points] For each part below, carefully draw on the axes to the right the graph of a single function that satisfies the given conditions, or, if it is not possible to do so, write NOT POSSIBLE and briefly explain why.

Make sure that any graph you draw is clear and unambiguous, and that you have carefully plotted any important points.

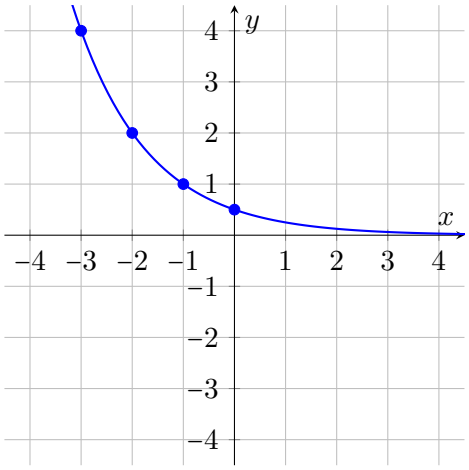
a. [2 points]

A linear function that passes through the point $(3, -1)$ and has a slope of $-\frac{4}{5}$.



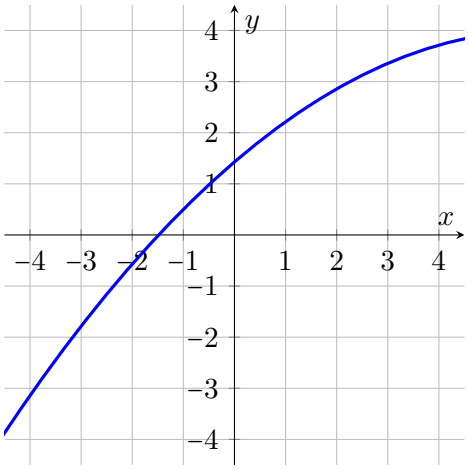
b. [3 points]

An exponential function that passes through the point $(-2, 2)$ and has a decay rate of 50%.



c. [2 points]

A function that is concave down and increasing for $-4 < x < 4$.



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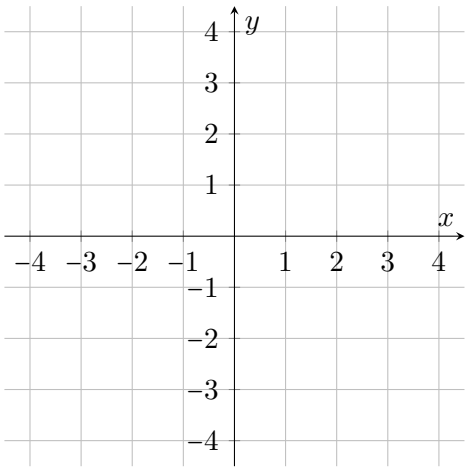
For each part below, carefully draw on the axes to the right the graph of a single function that satisfies the given conditions. Make sure your graph is clear and unambiguous. Or, if it is not possible to do so, write NOT POSSIBLE and briefly explain why.

d. [2 points]

A function that is concave up for $-4 < x < 4$ and that has the values given in the following table:

x	-2	0	3
y	-2	1	4



Solution: NOT POSSIBLE. The average rate of change on $[0, 3]$ is smaller than that on $[-2, 0]$, so the function cannot be concave up.

e. [2 points]

The function $g(x) = f(x+1) - 2$, where $f(x)$ is given in the graph below to the left.