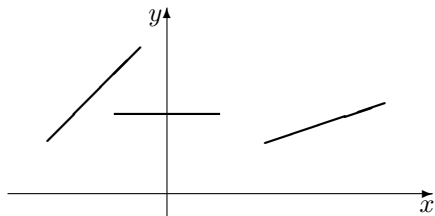


Homework 3

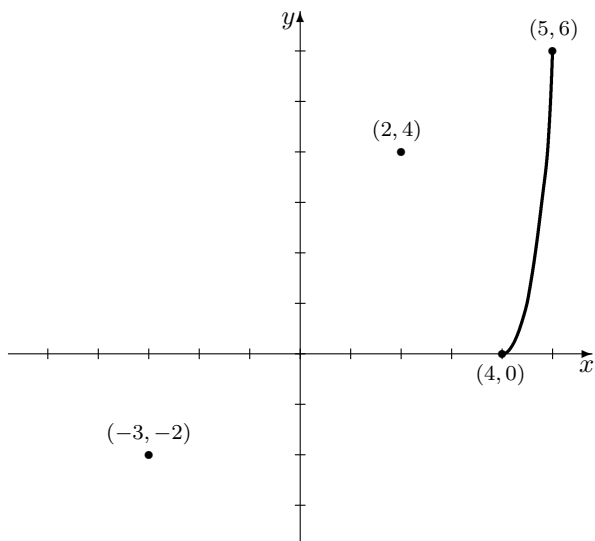
(due February 26)

Math 130 Kovitz 2020

1. Find the domain and range of the function $f(x) = \sqrt{x^3 + 8} + 8$.
Find the value of f when $x = 0$; and find all x (if there are any) for which $f(x) = 0$.
2. Let $f(x) = \sqrt{x^3 + 9} - 3$. Find all a for which $f(a) = a$. Check all answers.
3. Is this curve the graph of a function? Why or why not?



4. The following is the entire graph of a function f :



- (a) Find $f(-3)$ and $f(6)$.
- (b) For which a does $f(x) = a$ have more than one solution?
- (c) Estimate $f(4.5)$.
- (d) Estimate the x for which $f(x) = 5$.
- (e) Mark on the *graph* the point or points where $y = 4$ and $y = 5$.
- (f) Find the domain and the range.

- *5. Give an example of a linear equation in x and/or y that does not lead to a function of x . Graph it.
6. A linear function L is defined so that $L(2) = 11$ and $L(-1) = 23$. Find a formula for L of the form $L(x) = mx + b$. Then graph L , showing both intercepts and labeling them with their coordinates.
Is there another quadrant through which the graph passes besides the quadrants of the two given points? If so, plot and label a point in that quadrant.
7. Is it possible for the graph of a linear equation to have some points in all four quadrants? (Points on the axes are considered to belong to no quadrant.)
Justify your conclusion.
8. Let the g be function with the rule $g(x) = 2x^2 - 3x - 5$.
 - (a) Find $g(0)$, $g(0.75)$, $g(1.5)$, $g(2.5)$, and $g(-2)$.
(Calculator not needed, but allowed.)
 - (b) Find $\frac{g(-2+h) - g(-2)}{h}$.