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CSE-015: Discrete Mathematics
Homework4 - Functions
4.
a) Mobile phone number is one to one if each student has a different mobile phone number, which is usually the case. It would not make sense for two students to have the same phone number.
b) This was answered in the example provided.
c) Final grade in the class is not one-to-one since two students can have the same in the class. In real life, there is almost always a few students with the same grade/percentage in one class.
d) Home town is not one-to-one because it is very possible and not unlikely for two students to come from the same town. Most people in my school came from the same home town.
5. Determine whether each of these functions is a bijection from R to R.
a) $f(x) = -3x + 4$ this function is one-to-one(since no 2 different real numbers multiplied by -3 will result in the same real number) and onto(since you can take any real number subtract 4 and divide the result by -3, and get the x that is also a real number) therefore, it is a bijection from R to R.
b) $f(x) = -3x^2 + 7$ This part was answered in the provided example.
c) $f(x) = (x + 1)/(x + 2)$ since this function is undefined at x=-2, it is not a bijection.
d) $f(x) = x^3$ this function is one-to-one(since no 2 different real numbers cubed will equal to each other) and onto(since you can take a cube root of any real number and get a real number which will be x), therefore, it is a bijection from R to R.