

Lior Silberman's Math 312: ComPAIR Assignment 1

- This assignment is due Wednesday, 20/1/2021 at noon (Vancouver time)
 - Comparisons are due Sunday, 24/1/2021 at 11pm (Vancouver time).
1. You have an infinite supply of \$2 and \$3 coins. Use the well-ordering principle to prove that any sum of at least \$2 can be paid using these coins.
 2. Let $f(n) = n^7 - n$. Show by induction that $f(n)$ is divisible by 7 for all n .
 3. For any integer x :
 - (a) Show that $(x^4 + x^3 + x^2 + x + 1, x - 1)$ is either 1 or 5.
 - (b) Give a concise criterion in terms of x for when the answer is 5.
 - (c) Repeat for $(x^5 + x^4 + x^3 + x^2 + x + 1, x - 1)$.