C241 HW12 Mini

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1. $a = \{(1,2),(2,3),(3,1)\}$
2. No such example exists because the domain and codomain are the same and finite. The requirement of being a one-to-one function requires that each input have a different output, so each of the three possible input values must have a different output value, but then each of those three output values must come from the codomain, which is exactly the set containing those three values.
3. No such example exists because the domain and codomain are identical finite sets. The requirement of being an onto function means that every possible output value in the codomain has an input value, and the well-defined aspect of functions requires that no input value have more than on epossible output value, so each input value maps to exactly one output value, covering the whole codomain, so any function that is onto is also one-to-one.
4. $d = \{(1,1),(2,1),(3,1)\}$
5. $e(n) = 2n$
6. $f(n) = \begin{cases} 0 & n = 0 \\ \frac{n}{|n|} \cdot (n^2) & otherwise \end{cases}$
7. $g(n) = \begin{cases} 0 & n = 0 \\ \frac{n}{|n|} \cdot \lfloor \sqrt{|n|} \rfloor & otherwise \end{cases}$
8. $h(n) = 1$