More Fractured Theorems

This document contains more fractured theorems from Matt Koetz, Heather A. Lewis, and Mark McKinzie. It is based on their article "Bovino Weierstrass and Other Fractured Theorems," *Math Horizons*, April 2014, pp. 26–27. Find a cheat sheet to these theorems at
maa.org/mathhorizons/supplemental.htm.

Calculus

Extreme grading theorem: If your professor is continuous on a closed vacation interval, then she will grade the homework at a critical point (when it's due) or on the first or last day of the vacation.

Fig Newton method: While eating Fig Newtons, you can approximate when you'll run out by assuming that you'll keep eating at your current rate.

***Divergent* series test:** If each book in Veronica Roth's series has at least one page, her fans will never run out of reading material.

Comparison test: If you have a higher score than Pat on every question on the exam, then your overall score will be higher than Pat's.

Chia pet trick series test: If your Chia pet learns $1/2$ of a trick, then the next $1/4$ of the trick, then the next $1/8$ of the trick, then eventually it will know the trick sufficiently well.

Green's theorem: You can measure the size of the target on a golf hole by integrating $x\,dy$ around the perimeter of the target.

Analysis and Topology

A housed-off space: You can build separate houses at distinct addresses on the street.

Zorn's lemma: Since every list of mathematicians can be alphabetized, there must be some mathematician whose name occurs at the end of the alphabet.

Banana fixed-point theorem: If you squish a banana without breaking the peel, there is a unique point of banana that is in the same place it was before.

Jean-Luc Picard's theorem: As the *Enterprise* passes through a wormhole, Patrick Stewart will perform every Shakespearean role (except Hamlet) infinitely often in his ready-room.

Graph Theory

Puck's theorem: If you create a polygonal hockey arena on a lattice and put hockey pucks at each of the grid intersections, the area of the arena will be one less than the number of hockey pucks in the middle plus half the number of pucks on the boundary.

Abstract Algebra and Number Theory

Filbert's basis theorem: If there is a largest nut in a can of mixed nuts, then any handful of nuts will contain finitely many filberts.

Bailey's theorem: Every drink is isomorphic to one made at a well-stocked bar.

Gesundheit's theorem: If the trajectory of Chris's sneeze is a degree m polynomial and the trajectory of Pat's sneeze is a degree n polynomial, then there are mn places where you really don't want to stand.

Buy no meal coefficient: If you and Pat eat at a restaurant 7 times this week, $\binom{7}{n}$ computes the number of ways you can be treated to dinner n of those times.

Probability and Statistics

Bouffant hairdo theorem: If you randomly toss hairpins at a well-coiffed woman from the 1950s, you can predict the proportion that will stick in her hairdo based on the length of the hairpin.

Mark-off chain: If you mark one link in a chain, you know what to put on the next link without looking at all the previous links.