1. Here is a claim:

> **Claim 1** (Twin primes conjecture) — There are infinitely many primes that are two apart.

Proof. The proof is left as an exercise for the interested reader. □

2. Here is a lemma:

> **Lemma 1** (Johnson-Lindenstrauss '84) — A set of n points in high dimensional Euclidean space can be mapped into an $O(\log n/\varepsilon^2)$-dimensional Euclidean space such that the distance between any two points changes by only a factor of $(1 \pm \varepsilon)$.

Proof. The proof is left as an exercise for the interested reader. □

3. Here is a remark:

> **Remark 1** (Sexy primes conjecture) — There are infinitely many primes that are six apart.

Proof. The proof is left as an exercise for the interested reader. □

4. Here is a corollary:

> **Corollary 1** (Cousin primes conjecture) — There are infinitely many primes that are four apart.

Proof. The proof is left as an exercise for the interested reader. □

5. Here is a theorem:

> **Theorem 1** (Pythagorean theorem) — For any right-triangle the square of the hypotenuse is equal to the sum of squares of the other two sides.

Proof. The proof is left as an exercise for the interested reader. □

6. Here is a proposition based off Theorem 1:

> **Proposition 1** (Fermat's Last Theorem) — $a^n + b^n \neq c^n$ for any choices of $n > 2$.

Proof. I have a truly marvelous demonstration of this proposition that this margin is too narrow to contain. □

7. Here is a definition:

> **Definition 1** — Let $G = (V, E)$ be an undirected graph with edge-weights given by $w \colon E \to \mathbb{R}^+$. Assume that $w(e) \neq w(f)$ whenever e, f are distinct edges of G. We say that an edge is *treacherous* if it is the maximum weight edge of some cycle of G. On the other hand, an edge is *reliable* if it is not contained in any cycle of G.