Presentation 2
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Problem statement: Use the formal definition of the limit of a function to prove that

$$\lim_{x \to 2} 3x^2 + 6x - 5 = 19$$

Proof: Let $\epsilon > 0$ be given.
we can choose $\delta = \min\{1, \frac{\epsilon}{21}\}$.
Consider $x \in D$ where $0 < |x-2| < \delta$, then we have $0 < |x-2| < 1$ and $0 < |x-2| < \frac{\epsilon}{21}$.
Since $0 < |x-2| < 1$, we have $|x+4| = |x-2+6| \leq |x-2| + |6| < 7$ by the triangular inequality.
Therefore it follows

$$\begin{aligned}
|f(x) - L| &= |3x^2 + 6x - 5 - 19| \\
&= |3x^2 + 6x - 24| \\
&= |3(x^2 + 2x - 8)| \\
&= 3|(x^2 + 2x - 8)| \\
&= 3|(x+4)(x-2)| \\
&< 3 \times 7\delta \\
&= 21\delta \\
&< \epsilon
\end{aligned}$$

Since our choice of ϵ is arbitrary, we have proved $\lim_{x \to 2} 3x^2 + 6x - 5 = 19$.

The link to the presentation:
https://rensselaer.webex.com/rensselaer/ldr.php?RCID=d46e32ce2e4391c47a90dd4840c9d51b