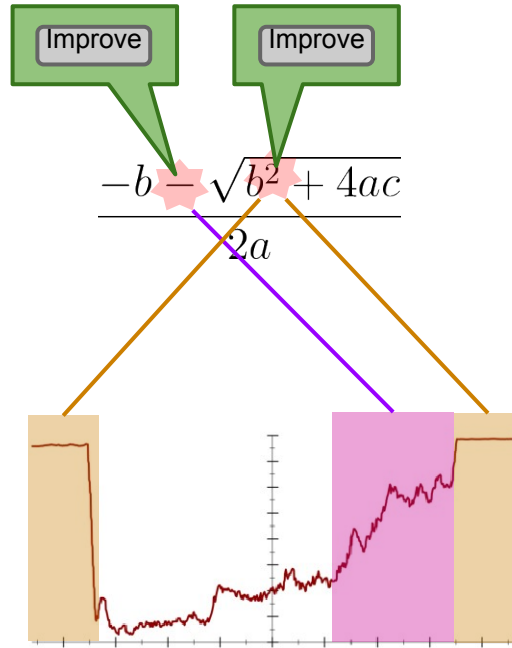


Herbie Interface Visualization

The Problem

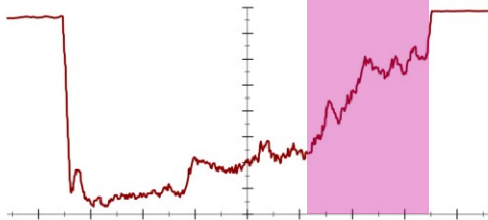
- Teach users how to identify and address floating point issues

Design



Design

$$\frac{-b - \sqrt{b^2 + 4ac}}{2a}$$

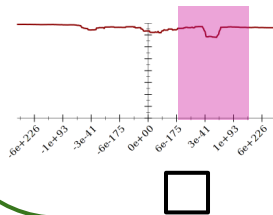


Apply the rule:

$$a - b \rightarrow \log \frac{e^a}{e^b}$$

to get:

$$\log \frac{e^{-b}}{e^{\sqrt{b^2 - 4ac}}}$$



Apply the rule:

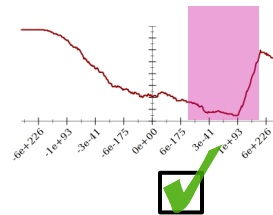
$$a - b \rightarrow \frac{a^2 - b^2}{a + b}$$

to get:

$$\frac{(-b)^2 - \sqrt{b^2 - 4ac}^2}{-b + \sqrt{b^2 - 4ac}} / 2a$$

and simplify to:

$$\frac{2c}{-b + \sqrt{b^2 - 4ac}}$$

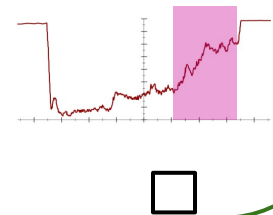


Apply the rule:

$$a \rightarrow 1 * a$$

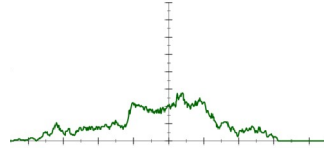
to get:

$$\frac{1 * (-b - \sqrt{b^2 - 4ac})}{2a}$$



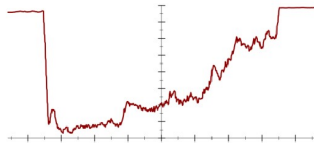
Design

Current combination



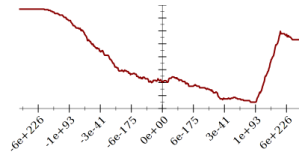
Choose

$$\frac{-b - \sqrt{b^2 + 4ac}}{2a}$$



Choose

$$\frac{2c}{-b + \sqrt{b^2 - 4ac}}$$



Questions

- Does this seem like an intuitive way to navigate?
- Does this increase intuition about the accuracy of floating point expressions?