Challenge #11

The Race

Tartaglia Turtle, Riemann Rabbit and Galloping Galois entered a race.

Tartaglia decided that keeping a constant speed would be a good strategy, so he started at the beginning at a steady 10 meters per minute.

Riemann decided to start slowly, 3 meters per minute and double his speed every minute.

Galloping Galois in a burst of energy starts out at 30 meters per minute and each minute after that he slows by 5 mpm, eventually exhausting himself.

Who wins the race?
Challenge #11 Solution

Tartaglia: steady 10 meters per minute.

Riemann: start at 3 meters per minute and double speed every minute.

Galois: start at 30 meters per minute and each minute after that slows down by 5 mpm.

1. If they race for 3 minutes,
   - \( R = 20 \) meters
   - \( G = 75 \) meters
   - \( T = 30 \) meters

2. If they run for 20 meters, then
   - \( R \approx 3 \) mins
   - \( G \approx \frac{5}{7} \) min
   - \( T \approx 2 \) min

3. If they run 110 meters, then
   - \( R \approx 5.2 \) mins
   * \( G \approx \) never gets there
   - \( T \approx 11 \) mins