R.5 Day 2 Challenge
Honors Algebra 2 with Trig

1. (NCTM May 2018#23)
   Find two fractions with different denominators such that their sum is $\frac{2x-1}{x^2-x-6}$

2. (NCTM May 2018 #10)
   A student incorrectly adds 2 unit fractions together by putting the sum of the 2 numerators over the sum of the 2 denominators. If the result coincidentally is the correct answer, what is the ratio of the two denominators?

   Definition → Unit Fraction: a rational number in which the numerator is 1 and the denominator is a positive integer.

   **Your answer will have a negative under a square root, its okay, just leave it as it is.

3. (NCTM March 2018 #3)
   Find all real solutions to the equation below, given that $x \neq 1, 2$.

$$\frac{1}{x-1} + \frac{2}{x-2} = A_2$$

4. In the seventeenth century, Lord Crouncker wrote down a most peculiar mathematical equation:

$$\frac{4}{\pi} = 1 + \cfrac{1^2}{2 + \cfrac{3^2}{2 + \cfrac{5^2}{2 + \cfrac{7^2}{\ddots}}}}$$

   This is an example of an infinite continued fraction. Simplify the infinite continued fraction:

$$n + \cfrac{1}{n + \cfrac{1}{n + \frac{1}{n}}}.$$