2.1-2.4

Enlightening summary #1: Section 2.3 discusses the how the Rhind Papyrus contains several arithmetic problems that are solved using the method of simple false position and double false position. Interestingly double false position is just another form of linear interpolation, as we can derive the formula on page 48 by simply looking at the point slope form of a line from the two guesses and finding the root. Suppose we want to solve $ax + b = 0$, with the two guesses being (g_1, f_1) and (g_2, f_2). Consider the line through those points in point-slope form,

$$y - f_1 = \frac{f_1 - f_2}{g_1 - g_2}(x - g_1).$$

Let $y = 0$ and solve for x,

$$\begin{aligned} -f_1 &= \frac{f_1 - f_2}{g_1 - g_2}(x - g_1), \\ -f_1\frac{g_1 - g_2}{f_1 - f_2} &= x - g_1, \\ g_1 - f_1\frac{g_1 - g_2}{f_1 - f_2} &= x, \\ \frac{g_1(f_1 - f_2)}{f_1 - f_2} - \frac{f_1(g_1 - g_2)}{f_1 - f_2} &= x, \\ \frac{f_1 g_2 - f_2 g_1}{f_1 - f_2} &= x. \end{aligned}$$

Although the method of simple false position has become more obscure, double false position forms the basis of the Regula Falsi root finding method, which still holds some relevancy in numerical analysis.

Enlightening summary #2: Section 2.4 discusses the origins of geometry and how ancient egyptians were able to approximate various geometric formulas like, the area of a circle, trapezoid, and volume of a truncated pyramid. Beyond that the rest of this section is centered around dispelling myths about the Great Pyramid with the underlying message that egyptian geometry never advanced to a stage where rigor was at the forefront.

Interesting: I found the story of the Rosetta Stone, and the Rhind Papyrus to be very engrossing. I wouldn't be surprised if there was ever a film made about Jean Francois Champollion and his efforts in deciphering egyptian Hieroglyphics. Also the story of how the Rhind Papyrus was pieced together seemed eerily preordained.

Confusing: In general I found the method of representing rational numbers in section 2.2 confusing. On page 45 we are given a proof for why the method of splitting a rational function into unit function terminates. The proof uses the monotone convergence theorem without explicitly stating it.