

2 Error Tolerance

- There will be 15% extra credit.
- Two important terms, accuracy & precision.
 - Accuracy refers to how close the computed value is to the true value.
 - Precision means how close the values are together.
- Because we want everything relative, we calculate with two different errors.
 - Absolute error = $e_a = |\text{True value} - \text{Approximation}|$
 - Relative error = $\epsilon_t = \frac{\text{True value} - \text{Approximation}}{\text{true}} \times 100$
- These equations can be used for precision as well.
 - $e_a = |\text{previous} - \text{current}|$
 - $\epsilon_t = \frac{\text{previous} - \text{current}}{\text{current}} \times 100$
- Stopping point is when it's below a certain threshold.
- If true value is 0, shift over by 1.
- For a result to be accurate or precise, should be $< 0.5 \times 10^{2-n}$, where n is the number of significant digits.
- the function of e^x can be represented as $e^x = 1 + x + \frac{x^2}{2} + \frac{x^3}{3!} + \dots + \frac{x^n}{n!}$
 - for $x = 1$, $e^1 = 2.71828$
 - for $x = -1$, $a = 1 - 1 = 0$