Possible Topics for Math 30/30+ Fall 2019 Common Final
This is meant to be a general guide to aid studying and is **not** an exhaustive list of all possible topics.

- Solve equations and formulas with one radical
- Solve absolute value equations and inequalities
- Solve linear equations and inequalities
- Find the equation of a line
- Solve compound interest problems
- Solve applied problems involving the fundamental counting principle, permutations, and combinations
- Simplify expressions involving factorials, permutations, and combinations **by hand or with a calculator**
- Describe subsets, complements, unions, and intersections using Venn diagrams involving two or three sets
- Solve equations with a logarithm or exponential expression
- Graph functions (linear, exponential, logarithmic)
- Compute basic statistics for a variable **by hand**, including mean, median, mode, quartiles, range, variance, and standard deviation
- Compute the expected value and standard deviation of a discrete random variable **by hand**
- Describe the distribution of a quantitative variable in terms of its shape, center, and spread, using graphical techniques
- Apply addition and multiplication rules of probability in problem solving
- Compute probabilities using two-way tables and spinners
- Identify probability models and compute their areas
- Approximate probabilities and areas under the normal curve using the Empirical Rule
- Graph and interpret bivariate data through the use of scatterplots, regression, and correlation

Formulas to be provided on the final

$$A = P\left(1 + \frac{r}{n}\right)^{nt} \qquad A = Pe^{rt} \qquad s = \sqrt{\frac{\sum(x - \bar{x})^2}{n-1}} \qquad \mu_x = E(x) = \sum x \cdot P(X = x)$$

$$\sigma_x = \sqrt{\sum(x - \mu_x)^2 \cdot P(X = x)} \qquad {}_nP_r = \frac{n!}{(n-r)!} \qquad {}_nC_r = \frac{n!}{r!\,(n-r)!}$$

$$\mu = \frac{a+b}{2} \qquad \sigma = \sqrt{\frac{(b-a)^2}{12}} = \frac{b-a}{\sqrt{12}}$$