

Review for first exam

There are no explanations on this list. If anything seems unfamiliar, look it up in the text, or ask about it in class, or ask me or someone else outside of class.

- (•) arithmetic sequence: $a_{n+1} = a_n + d$, $a_n = a_1 + (n-1)d$
- (•) Sum of the first k -terms of an arithmetic sequence: $\frac{k}{2}[a_1 + a_k]$
- (•) geometric sequence: $a_{n+1} = r a_n$, $a_n = r^{(n-1)} a_1$
- (•) If $-1 < r < 1$, sum of every term of a geometric sequence is $\frac{a_1}{1-r}$.
- (•) $n!$ is the number of ways to order a set of n objects.
- (•) $\frac{n!}{(n-k)!}$ is the number of ways to choose and order k objects from a set of n objects.
- (•) $\binom{n}{k} = \frac{n!}{k!(n-k)!}$ is the number of ways to choose k objects from a set of n objects.

(•) Pascal's Triangle

$$\begin{array}{cccccc} & & \binom{0}{0} & & & \\ & & \binom{1}{0} & \binom{1}{1} & & \\ & & \binom{2}{0} & \binom{2}{1} & \binom{2}{2} & \\ & & \binom{3}{0} & \binom{3}{1} & \binom{3}{2} & \binom{3}{3} \\ & & \binom{4}{0} & \binom{4}{1} & \binom{4}{2} & \binom{4}{3} & \binom{4}{4} \\ 5) & \binom{5}{0} & \binom{5}{1} & \binom{5}{2} & \binom{5}{3} & \binom{5}{4} & \binom{5}{5} \\ & & \vdots & & & & \end{array}$$

Pascal's Triangle:

$$\begin{array}{cccccc} & & & & 1 & & \\ & & & & 1 & 1 & \\ & & & & 1 & 2 & 1 \\ & & & & 1 & 3 & 3 & 1 \\ & & & & 1 & 4 & 6 & 4 & 1 \\ 5) & & & & 1 & 5 & 10 & 10 & 5 & 1 \\ & & & & & \vdots & & & & \end{array}$$

Graphs

