

## Section 4.2 Homework

### Problems Using Summation Notation and Formulas

Do problems: 5, 7, 9, 11, 13, 19, 21, 35

### Proof by Mathematical Induction:

- Use mathematical induction to prove that  $\sum_{i=1}^n i = \frac{n(n+1)}{2}$  (This is Section 4.2 Theorem 2.1 formula (ii))

*Yes this is proved in the book using another method. You are asked use mathematical induction to prove it, to get practice using that technique. (It is easier than if I had assigned #34!)*

- Use mathematical induction to prove that  $\sum_{i=1}^n i^3 = \frac{n^2(n+1)^2}{4} = \frac{n^4 + 2n^3 + n^2}{4}$  (This is Section 4.5 problem 33.)

➤ IF you are still need more practice, then redo the proof that we did in class that is also in the textbook, but work it out by yourself, not by copying it.

$$\sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6} = \frac{2n^3 + 3n^2 + n}{6} \quad (\text{This is Section 4.2 Theorem 2.1 formula (iii)})$$

*These are the 3 formulas that I will expect you will be able to prove using mathematical induction on a quiz, assignment, or exam.*