

Instructions

- Answer each question completely; justify your answers.
 - This assignment is due at 17:00 on Thursday November 16th in Assignment Box #35.
1. Section 5.1, Exercise 4, part (e).
 2. Let $n \in \mathbb{N}$. Prove that $\sum_{i=1}^n i^3 = \left(\frac{n(n+1)}{2}\right)^2$.
 3. Section 5.1, Exercise 37, part (a).
 4. Suppose that a_1, a_2, a_3, \dots is an arithmetic sequence with $a_1 = a$ and common difference d .
Prove that the sum of the first n terms is $S_n = \frac{n(2a + (n-1)d)}{2}$.
 5. Section 5.2, Exercise 23.
 6. Section 5.2, Exercise 27.
 7. Section 5.2, Exercise 32, parts (a) and (b).
 8. Section 5.3, Exercise 6.
 9. Section 5.3, Exercise 14, part (a).
 10. Consider the sequence defined by $a_0 = 2$, $a_1 = 3$ and for each $n \geq 2$, $a_n = -a_{n-1} - a_{n-2}$.
Determine a_n in general, and then use your solution to determine a_3 .