3) (5 pts) ANL (Summations)

Determine a closed form solution to the following summation in terms of **n**. Simplify your answer to standard polynomial form (not factored).

$$\sum_{i=1}^{3n}(2i+5)$$

$$\sum_{i=1}^{3n}(2i+5) = \sum_{i=1}^{3n}2i + \sum_{i=1}^{3n}5$$

$$= \frac{2(3n)(3n+1)}{2} + 5(3n)$$

$$= 3n(3n+1) + 15n$$

$$= 9n^2 + 3n + 15n$$

$$= \mathbf{9n^2 + 18n}$$

Grading: 1 pt split sum, 2 pts apply sum of 2i, 1 pt apply sum of 5, 1 pt simplify to right form

Computer Science Foundation Exam

August 24, 2024

Section D

ALGORITHMS

NO books, notes, or calculators may be used,
and you must work entirely on your own.

SOLUTION

Question #	Max Pts	Category	Score
1	5	DSN	
2	10	DSN	
3	10	DSN	
TOTAL	25	----	

You must do all 3 problems in this section of the exam.

Problems will be graded based on the completeness of the solution steps and <u>not</u> graded based on the answer alone. Credit cannot be given unless all work is shown and is readable. Be complete, yet concise, and above all <u>be neat</u>. For each coding question, assume that all of the necessary includes (stdlib, stdio, math, string) for that particular question have been made.