WI23_CSBR-NY_1_NC_INT2 HW6 (Q5)

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TOTAL POINTS

16.5 / 20

QUESTION 1

1 Q5 16.5 / 20

✓ **- 0.5 pts** *Did not properly define $$\forall n \geq n_0$$*

✓ **- 3 pts** *Did not show clear work identifying constants for (b)*

1 ??

2 Typo. We need to prove Theta() instead of O() only

Question #5:

a) $5n^3 + 2n^2 + 3n = O(n^3)$

Proof:

$5n^3 <= 5n^3 + 2n^2 + 3n <= 5n^3 + 2n^3 = 15n^3$

$C_1 = 15$

$C_2 = 5$

$N_0 = 3$

Therefore, $5n^3 + 2n^2 + 3n = O(n^3)$ 2

b) $sqrt(7n^2 + 2n – 8) = O(n)$

Proof:

$sqrt(7n^2 + 2n – 8) = 7n + 2sqrt(n) - sqrt(8)$ 1

$7n <= 7n + 2sqrt(n) - sqrt(8) <= 7n + 2n = 9n$

$C_1 = 9$

$C_2 = 7$

$N_0 = 4$

Therefore, $sqrt(7n^2 + 2n – 8) = O(n)$

1 Q5 **16.5 / 20**

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