(d) [18 pts] **Heuristic function properties**

Suppose you are completing the new heuristic function h_3 shown below. All the values are fixed except $h_3(B)$.

Node	A	B	C	D	E	F	G
h_3	11	10	?	6	2.5	4.5	0

For each of the following conditions, write the set of values that are possible for $h_3(B)$. For example, to denote all non-negative numbers, write $[0, \infty]$, to denote the empty set, write $\varnothing$, and so on.

(i) [4 pts] **What values of $h_3(C)$ make h_3 admissible?**

Put your answer to 2d(i) here:

$h_3(C) \in [9, 10]$

(ii) [6 pts] **What values of $h_3(C)$ make h_3 consistent?**

Put your answer to 2d(ii) here

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(iii) [8 pts] **What values of $h_3(C)$ will cause A* graph search to expand node A, then node C, then node B, then node D in order?**

Put your answer to 2d(iii) here

$\varnothing$

(e) [6 pts] **Admissibility and consistency part II**

Let h_4 and h_5 be admissible heuristics. Determine whether each of the following is necessarily admissible.

(i) [2 pts] [necessarily admissible / not necessarily admissible] $\max(h_4, h_5)$

(ii) [2 pts] [necessarily admissible / not necessarily admissible] $\min(h_4, h_5)$

(iii) [2 pts] [necessarily admissible / not necessarily admissible] $(h_4 + h_5)/2$