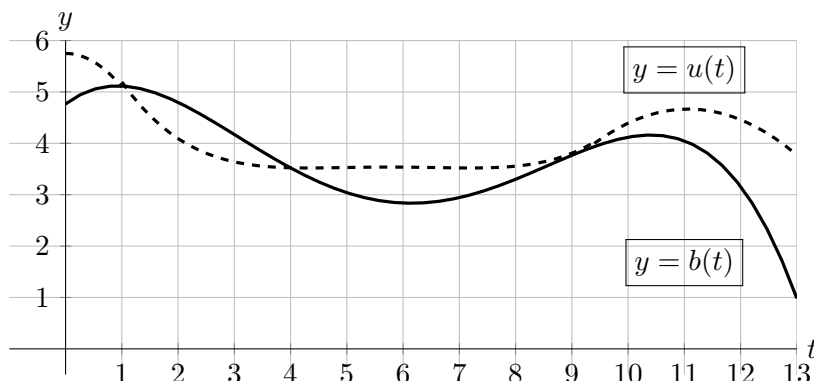


9. [9 points] Recall from the last problem that $b(t)$ is the rate at which Ben buys cabbage, in pounds per month, for his business t months after the beginning of 2015. Let $u(t)$ be the rate at which Ben uses the cabbage he buys, in pounds per month, t months after the beginning of 2015. The graphs of the functions $b(t)$ (solid line) and $u(t)$ (dashed line) are shown below.



Let $h(t)$ be the amount of cabbage, in pounds, that Ben bought but has not used for his business. In questions **a**, **b** and **c**, answer NONE when appropriate. You do not need to justify your answers.

- a. [2 points] Find and classify all local extrema of $h(t)$ in $0 < t < 13$.

Solution:

Local max(es) at $t = 4$ Local min(s) at $t = 1$

- b. [2 points] Find all global extrema of $h(t)$ in $0 \leq t \leq 13$.

Solution:

Global max(es) at $t = 4$ Global min(s) at $t = 13$

- c. [2 points] Estimate all inflection points of $h(t)$ in $0 < t < 13$.

Solution:

Inflection point(s) at $t \approx 2.2, 6.2$ and 9.2 .

- d. [3 points] Complete the following sentence to give a practical interpretation of $h'(14.5) = -1.3$.

Solution:

During the first half of March of 2016, the amount of cabbage that Ben has bought but not used for his business decreases by approximately 0.65 pounds.