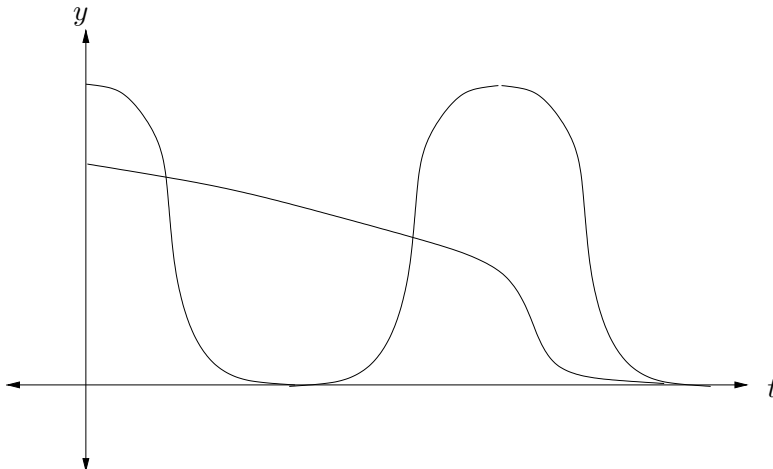


9. (4+3+3 points) After watching hummingbirds for a while, you head to the beach to tan. Shortly after you begin tanning you are overcome with boredom. You decide to pass your time by digging a glorious hole in the ground. Just as a satisfactory hole begins to emerge from your efforts, the tide comes in and waves begin to wash sand back into your hole. You continue digging, but your enthusiasm is ending. Finally, you realize you're defeated and give up. The rate of sand flow into the hole due to the incoming waves and the rate of flow of sand out of the hole due to your digging are graphed below. Assume time $t = 0$ corresponds to the first wave coming in.



(a) Label which curve corresponds to the rate of sand going out of the hole and which curve corresponds to the rate of sand being washed into the hole by the waves. Explain how you arrived at your answer.

(b) Mark and label the point on the graph when the least amount of sand was in the hole. Label the point as A . Explain how you arrived at your answer.

(c) Mark and label the point on the graph when the amount of sand in the hole was increasing most rapidly? Label the point as B . Explain how you arrived at your answer.