

7. [12 points] Include all your work in the following problems to receive full credit.
- a. [6 points] At the supermarket, you decide to buy blueberries and mangos. The price of blueberries is \$5.75 per pound and mangos cost \$3.20 per pound. Suppose that you spend \$30 buying  $B$  pounds of blueberries and  $M$  pounds of mangos. Let  $f$  be the function such that  $B = f(M)$ .

(i) Find a formula for  $f$ .

$$f(M) = \underline{\hspace{10em}}$$

- (ii) Find the vertical intercept of the graph of the function  $f$ , and interpret this intercept using complete sentences. Include units, and your answer must be exact or accurate up to 2 decimal places.

$$\text{Vertical intercept} = \underline{\hspace{10em}}$$

Practical interpretation:

- b. [6 points] A supermarket opens everyday at 8 am and closes at 6 pm. The supermarket manager notices that the amount of clients during a day is given by a quadratic function. Let  $C(t)$  be the amount of clients in the supermarket  $t$  hours after the store opened. Find a formula for  $C(t)$  if there are 250 clients in the store at 10 am, and there are no clients when the store opens and closes.

$$C(t) = \underline{\hspace{10em}}$$