9. [11 points]

    a. [4 points] Susan has a budget of 150 dollars to buy coffee or green tea. The prices per pound of coffee and green tea are 8 and 40 dollars respectively. Suppose that she spends all her budget buying C pounds of coffee and G pounds of green tea. Find a formula for C in terms of G. Show all your work.

        Solution: Since $8C + 40G = 150$ then $C = \dfrac{150 - 40G}{8}$.

    b. [7 points] A farm sells milk to a cheese company. The farm charges two dollars per gallon and a shipping fee of 30 dollars. On orders of more than 50 gallons, the price of each gallon above the first 50 gallons is reduced to 1.80 dollars. Let $P(m)$ be the cost (in dollars) of buying m gallons of milk from the farm. Write a piecewise defined formula for $P(m)$. Your formula must reflect the practical domain of this function.

        Solution:

$$P(m) = \begin{cases} 30 + 2m & 0 < m \le 50 \\[2mm] 130 + 1.8(m - 50) = 40 + 1.8m & m > 50 \end{cases}$$