Question 1

(a) 

(b) Amy’s budget line is given by 

\[ x_1 + 2.5x_2 = 20. \]
Question 2

Demand of good 1 decreases by 6 units.

Demand of good 2 decreases by 3 units.
**Question 3** At the optimal choice \( MRS = \frac{x_B^2}{x_A^2} = 4 \). Thus,

**the equation of the income offer curve is** \( x_B = 2x_A \).

The equation of the budget line is \( 4x_A + x_B = 180 \). Substitution yields \( 6x_A = 180 \).

\[ x_A = 30, \ x_B = 60. \]

**Question 4** If steak is on the horizontal, and eggs on the vertical axis, then Mr. Yellowhat’s MRS is 6. Because he consumes a positive amount of each good \( \frac{p_S}{p_E} = 6 \). Thus, \( p_S = 3 \).

**Then Mr. Yellowhat’s income is** \( I = 61 \).

**Question 5**

(a)
(b) She consumes

10 units of pizza and 10 units of soda.

Question 6
(a) He consumes

3 units of chocolate, and 3 units of ice cream.
(b) He consumes

7.5 units of chocolate, and 0 units of ice cream.

Question 7
(a) The MRS = \(\frac{10}{\sqrt{t}}\). At the optimal choice \(5 = \sqrt{t}\). Therefore

the optimal \(t = 25\).

He spends 50 Dollars on long distance calls.

(b) Now \(10/\sqrt{t} = 1\). Thus,

the optimal \(t = 100\).

He spends 110 Dollars on long distance calls.

(c) His consumption under the first plan is (25, 150). His consumption under the second plan is (100, 90). \(u(25, 150) = 250\), and \(u(100, 90) = 290\).

His utility from plan (a) is 250.

His utility from plan (b) is 290.

As a consequence he prefers plan (b)
Question 8