Question 1

(a) He consumes

100 units of chocolate, and 100 units of ice cream.

(b) He consumes

0 units of chocolate, and 300 units of ice cream.

Question 2 At the optimal choice \( MRS = \frac{x_B^2}{x_A^2} = 1/9 \). Therefore

the equation of the income offer curve is \( 3x_B = x_A \).

The equation of the budget line is \( x_A + 9x_B = 180 \). Substitution yields

12x_B = 180. Therefore

His optimal consumption choice is

\[ x_A = 45, \quad x_B = 15. \]

Question 3 If steak is on the horizontal, and eggs on the vertical axis, then Mr. Yellowhat’s MRS is 7. Because he consumes a positive amount of each good \( \frac{p_S}{p_E} = 7 \). Thus, \( p_S = 3.5 \).

Then Mr. Yellowhat’s income is \( I = 38 \).
Question 4

$x_2$

$x_1$
Question 5

(a)

(b) Amy’s budget line is given by

\[ x_1 + 0.75x_2 = 12. \]
Demand of good 1 decreases by 2 units.

Demand of good 2 decreases by 1 units.
Question 7

(a)

(b) She consumes 21 units of pizza and 21 units of soda.

Question 8

(a) The MRS = \(4/\sqrt{t}\). At the optimal choice \(2 = \sqrt{t}\).

the optimal \(t = 4\).

He spends 8 Dollars on long distance calls.

(b) Now \(4/\sqrt{t} = 0.5\).

the optimal \(t = 64\).

He spends 52 Dollars on long distance calls.
(e) His consumption under the first plan is (4, 292). His consumption under the second plan is (64, 248). $u(4, 292) = 308$ and $u(64, 248) = 312$. 

His utility from plan (a) is 308.

His utility from plan (b) is 312.

As a consequence he prefers **plan (b)**.