Question 1

Consider again the original budget line depicted above. Suppose that income is \( I = 360 \). Then \( p_1 = 30, \ p_2 = 20 \) 4 points

Question 2  Preferences are indicated below by indifference curves
1. Circle the correct statements

(6, 2) > (0, 10)  (24, 0) ≥ (0, 20)  (7, 12) ≻ (12, 7)

(10, 14) ≻ (14, 10)  (18, 15) ≥ (5, 5)  (24, 0) ≥ (0, 24)  6 points

2. Answer the following questions

MRS(6, 2) = 1/3

MRS(8, 10) = 1  4 points

3. Suppose that (2, 14) is the optimal consumption choice. Thus, the MRS = 3 = \( p_1 / p_2 \). Since \( p_1 = 24 \), we get

\[ p_2 = 8 \] and income is \( I = 160 \)  4 points
Question 3

The bank should choose $x_S = 10, x_L = 30$

The bank’s profit (value of objective is 4 (million) Dollars)

12 points

Question 4

The solution is $x_1 = 3, x_2 = 12$

12 points
Question 5

At the optimal choice $x_1 = 9$, $x_2 = 6$
Question 6 \[ \epsilon^S_P = \frac{P}{10 + P}. \] Thus,

**The price elasticity of supply at** \( P = 10 \) **is** \( \epsilon^S_P = 1/2 \)

\[ \epsilon^S_P = -\frac{2P}{100 - 2P} = 1 \text{ implies } 2P = 2P - 100. \] Thus,

**Demand is unit elastic, i.e.,** \( \epsilon^D_P = 1 \), **at** \( P = 25 \)

In equilibrium \( 100 - 2P = 10 + P \). Thus,

\[ P^* = 30, \quad Q^* = 40 \]

**Question 7**
(a) Price of steel increases and demand decreases.  

Price

(b) Since the price of an input increases, supply will shift to the left. Price for cars will increase and demand decreases.

Price

Question 8

(a) When \( P = 100 \) demand is 90,000. Thus,

**Excess demand is 50,000**

(b) The equilibrium price is given by \( Q_{D}(P^{*}) = 40,000 \). Thus, \( P^{*} = 600 \).

Therefore,

**Your expected profit (revenue - cost) is 500**

Question 9 (a) and (b) are linear

**List all constraints that are slack: (2), (4)**