UNIT 2 WORKSHEET 22
DETERMINING MAXIMUM AND MINIMUM VALUES

1. Find the maximum value of the function: \( f(x) = -2x^2 + 6x + 12 \)

2. Find the maximum value of the function: \( f(x) = -5x^2 + 30x - 200 \)

3. For what value of \( x \) does the function \( f(x) = -5x^2 + 200x + 2300 \) achieve its maximum value?

4. Find the minimum value of the function: \( f(x) = \frac{1}{4}x^2 - 10x + 800 \)

5. Find the minimum value of the function: \( f(x) = 3x^2 + 4x + 3 \)

6. Find the number of units that produce a maximum revenue \( R = 800x - 0.1x^2 \), where \( R \) is the revenue in dollars, and \( x \) is the number of units sold.

7. The profit a company makes is given by the model \( P = -0.4x^2 + 30x + 220 \), where \( P \) is the profit the company earns and \( x \) is the amount spent on advertisement in hundreds of dollars. What amount should the company spend on advertising in order to maximize profits.

8. The more expensive a product, the less you can sell. The relationship between the price, \( p \), and the quantity, \( q \), of sold products is given by the following formula \( q = 30 - 2p \). The revenue is given by \( R = pq \). For what price will you have the maximum revenue?