1. The bases are loaded, and Jackson steps up to the plate. He *swaks* the ball, whose trajectory is defined by the equation: $y = \dfrac{-2}{49}(x-21)^2 + 18$, where y represents the height of the ball and x, the distance it travels. The variables x and y are expressed in metres. How far does the ball travel? Clearly show all your work.
    (10 marks)

2. An object is thrown from the top of a building 18 m high. The graph below represents the height in metres reached by the object with respect to the time in seconds. The equation that represents this situation is:

$$y = -\frac{15}{7}x^2 + \frac{180}{7}x + 18$$

Height (m)

Time (s)
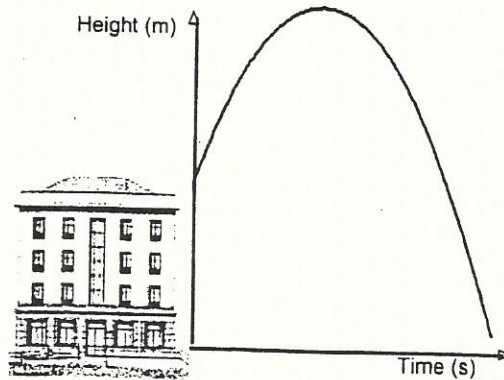
Determine how long it will take for the object to reach its maximum height. Clearly show all your work. (10 marks)

3. Marcela tracked the price of her company's shares over a one-month period. She noticed that the share price fluctuated according to the equation:

$$y = \frac{x^2}{10} - 2x + 6.5,$$ where x represents a specific day during the observation period and y, the share price in $.

On which day did the share price reach its lowest point? Clearly show all your work. (10 marks)

4. A rhombus has an area of 126cm^2. Given that the long diagonal measures 4 cm more than the short diagonal, determine the perimeter of the rhombus. Clearly show all your work. (10 marks)