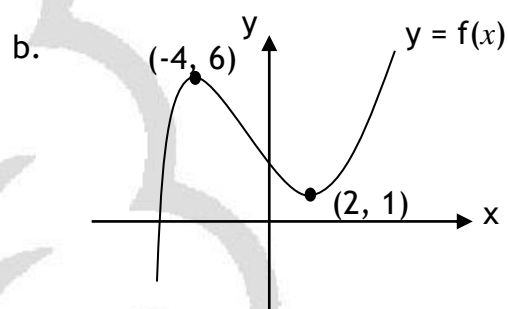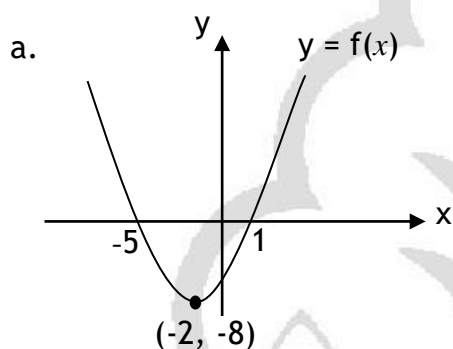# Higher Exercise 6

1. For a sequence, $U_{n+1} = mU_n + c$, $U_0 = 1$, $U_1 = 3$ and $U_2 = 7$.

    a. Find the values of m and c.
    b. Hence, calculate the value of U_4.

2. In the diagrams below, the graphs of $y = f(x)$ can be seen. Sketch the graph of the derived function for each of the functions.

    a.

    b.

3. A triangle EFG has vertices E(-1, 1), F(9, 1) and G(3, -7).

    a. Find the equation of the median EM.
    b. Write down the equation of the perpendicular bisector of EF.
    c. Find the coordinates of the point of intersection of these two lines.

4. A function f is defined by $f(x) = x^4 + 8x^3 - 6$.

    a. Find the coordinates of the point where the graph of $y = f(x)$ crosses the y-axis.
    b. Find the stationary points and determine their nature.