Exercise 1: (1.5 points) Find the general term in the following series:

a) $\{12, 60, 300, 1500, 7500 \cdots\}$

b) $\{17, 14, 11, 8, 5 \cdots\}$ and find the position of the term -76

c) $\left\{0, \dfrac{1}{8}, \dfrac{2}{27}, \dfrac{3}{64}, \dfrac{4}{125}, \dfrac{5}{216} \cdots \right\}$

Exercise 2: (1 point) In an arithmetic progression we know that $a_1 = 30$ and $a_{15} = 2$. Find the general term and the sum of the first eighty-two terms.

Exercise 3: (0.75 points) Find the sum $1 + 5 + 9 + 13 + \cdots\cdots + 197$

Exercise 4: (1 point) In a GP we know that $a_6 = 4131$ and $a_{15} = 81310473$ Find the general term and the sum of the first forty-five terms.

Exercise 5: (1 point) A ball is rolling along the floor and, due to friction, every second it covers a distance that's exactly five sevenths of the previous one. If the first second the ball covers a distance of 10 cm:
a) Find the general term of the sequence
b) Work out the values of S_{20}, S_{50} and S_{100}
c) Interpret the previous results

Exercise 6: (1.5 points) Given the polynomials:
$$P(x) = 3x^3 - 2x^2 + 7x$$
$$Q(x) = -3x^3 + x^2 - 5x - 7$$
$$R(x) = 5x - 2$$
Work out the value of the following operations:
a) $P + Q =$
b) $P - Q =$
c) $Q \cdot R =$

Exercise 7: (1.5 points) Expand these expressions using quadratic multiplication formulas:
a) $(z - 6)^2 =$
b) $(5x - 7) \cdot (5x + 7) =$
c) $(4x + 1)^2 =$
d) $(3x^3 - x^2)^2 =$

Exercise 8: (1 point) Take out all the possible common factors:
a) $12x^6 - 24x^4 + 18x^3 - 9x^2 =$
b) $u^2 v^3 w^2 - u^2 vw^2 - u^5 v^3 w^7 =$
c) $5xy - 10x^2 y^2 - 20x^3 y =$

Exercise 9: (0.75 points) Evaluate the polynomial $P(x) = x^4 - 5x^3 + 7x - 8$ when:
a) $x = 1$
b) $x = -2$