

## SEQUENCES AND POLYNOMIALS TEST



3° ES0

Exercise 1: (1.5 ptos) Find the general term of the following sequences:

a) 
$$\left\{ \frac{2}{2}, \frac{5}{3}, \frac{10}{4}, \frac{17}{5}, \frac{26}{6}, \frac{37}{7} \cdots \right\}$$

- b) {5,12,19,26,33,40 ···}
- c) {3, 12, 48, 192, 768, 3072 ···}

Exercise 2: (1 pto) In an AP we know that  $a_{15} = 31$  and  $a_{57} = 115$ . Find the general term,  $a_{75}$  and the sum of the first one hundred and twenty five terms.

Exercise 3: (1 pto) In a GP we know that  $a_1 = 5$  and  $a_{10} = 98415$ . Find the general term and the sum of the first fifty terms.

<u>Exercise 4:</u> (1 pto) A regular man has a total of 56000000 of sexual cells in his sperm but, due to the contamination in the air, the number has been decreasing by 2.65% during the past years. What will the number of sexual cells be 30 years from now?

Exercise 5: (0.75 ptos) A worker has a salary of 20000€/year, but he gets an increase of 200€ every year. What will his salary be ten years later?

Exercise 6: (1 pto) Work out using quadratic multiplication formulas:

a) 
$$(3y^4 - 2xy^3)^2 =$$

b) 
$$(5z^7-3)(5z^7+3)=$$

Exercise 7: (1 pto) Simplify:

a) 
$$\frac{x^2 - 10x + 25}{x^2 - 25} =$$

b) 
$$\frac{x^2-1}{x^2+2x+1} =$$

Exercise 8: (1 pto) Take out common factors:

a) 
$$20a^5 - 25a^4 + 35a^3 - 5a^2 =$$

b) 
$$a^3b^2c + a^4b^3c^2 + a^5b^4c^3 =$$

Exercise 9: (1.75 ptos) Given the polynomials  $P(x) = 2x^3 - 5x^2 - x + 4$ ,  $Q(x) = -x^3 + 4x^2 - x - 3$  and  $R(x) = x^2 - 2x$ , work out:

a) 
$$P - Q =$$

b) 
$$P \cdot R =$$

c) 
$$R^2 =$$

