**GRADE 8 EXCELLENT STUDENT SURVEY**

**SCHOOL YEAR 2023 – 2024**

**SUBJECT: MATHEMATICS**

***Duration: 150 minutes (excluding the duration of the lesson)***

**Question 1 (2.5 points).**

**1.** Analysis of the following polynomials into factors:

a) 

b) 

**2**. For Expressions 

a) Search for the determining condition and abbreviate it.

b) Find  to .

c) Find the smallest value of  the 

**Question 2 (2.0 points).**

**1.** Give a,b,c a couple of different satisfactions: 

Prove that: 

**2**. For polynomials:  where a, b, c are real numbers. Know the polynomial f(x) divided by the polynomial x + 1 residual – 4 and divided by the polynomial x – 2 residual 5. Calculate the value of

 

**Question 3 (1.5 points).**

**1.** Solving equations: 

**2.** Find all pairs of integers  that satisfy the equation:



**Question 4 (3.0 points).**

Give the  right triangle a balance at . On the opposite ray of the ray  take the point  so that . Called the  perpendicular projection of the  top,  cut  at . Called  the midpoint of  and , respectively,  is the point of three points apart. Prove that:

a) 

b) 

c) 

d) Regular-grade lines.

**Question 5 (1.0 points).**

1) Two distinct numbers are randomly selected from the set 

 and multiply together. What is the probability of multiplying by 0?

2. Given a,b,c are the satisfactory positive numbers: .

 Demonstrate: 

*---------------***End***--------------*

|  |  |
| --- | --- |
|  |  |
| **Sentence** | **Answer** | **Point** |
| **Question 1****(2.5 points)**  | **1. (1.0 points)** |
| a) = | **0,25** |
| = | **0,25** |
| b) (x – y)3 + (y – z)3 + (z – x)3 |  |
| Đặt x – y = a , y – z = b, z – x = c thì a + b + c = 0. | **0,25** |
| So:  | **0,25** |
| **2. (1.5 points)** |
| a) **(0.5 points)** |
|   | **0,25** |
| We have:    So,  with . | **0,25** |
|  |
| b) **(0.5 points)** |  |
| To reach  out to deduce  with  | **0,25** |
| Because you should choose So  | **0,25** |
| **c) (0.5 points)** |  |
| We have: With  the reason  and . Apply the Colossian real estate to 2 positive numbers  and  we have:  | **0,25** |
| The sign « = » with ( Agreement of the Land Registration Agreement)So  | **0,25** |
| **Question 2****(2.0 points)** |  |
| **2.1. ( 1.0 points)** Give a,b,c a couple of different satisfying:  Prove that:  |  |
| **We have:**  | **0,25** |
|  | **0,25** |
| Similar:  | **0,25** |
| Therefore:  | **0,25** |
| **2.2. (1.0 points)** For polynomials:  where a, b, c are real numbers. Know the polynomial f(x) divided by the polynomial x + 1 residual – 4 and divided by the polynomial x – 2 residual 5. Calculate the value of  |  |
| The polynomial f(x) is divided by the polynomial x + 1 remainder – 4, so we have: (1) | **0,25** |
| The polynomial f(x) divided by the polynomial x - 2 is the remainder of 5, so we have:(2) | **0,25** |
| From (1) and (2)  | **0,25** |
|  |  |
| So: | **0,25** |
| **Question 3(1.5 points)** | **3.1.(0.75 points):** Solving equations:  |
| Since  it is not the solution of the equation, we can divide both sides  : | **0,25** |
| Put | **0,25** |
| With:With:  Inactive equationsSo the equation has 2 experiments:  | **0,25** |
| **3.2. (0.75 points)**  |
|   (\*)Because  with everything  the word (\*) we have  | **0,25** |
| Therefore  ,  With  instead of the equation we can With  instead of the equation we have  (type)With  instead of the equation we have  (type)With  instead of the equation we can  | **0,25** |
| So the pairs of integers (;) to look for is  | **0,25** |
| **Question 4. (3.0 points)** | **4.(3.0 points)** |  |
|  | 0,25 |
| **a) (0.75 points).**  |
|  Consideration  and  Yes  (same as  ),   | 0,25 |
|   = (g-c-g)  | 0,25 |
|  |
| **b) (0.75 points).**  |  |
|  We have  *(1)* (because  the two midlines correspond to the hypotenuse of the two right triangles  and )Similar Yes  ( as evidenced above) (3)The words (1), (2) and (3)  quadrilateral  are diamonds. | 0,25 |
| ΔAEC and ΔAFB have     =    | 0,25 |
| Which  It is inferred that a quadrilateral  is a square.=>AK is the discerning ray of  | 0,25 |
| **C) (0.75 points).**  |  |
|  and  common  , (g-g) | 0,25 |
|  |  |
|  (c-g-c) | 0,25 |
|    | 0,25 |
| **d) (0.75 points).**  |
| A quadrilateral  is a square that deduces  and  intersects at the midpoint of each line. square at ,  square at   , which    is the direct line of .  | 0,25 |
|  | Which   is the direct line of . which    | 0,25 |
| Extrapolating a quadrilateral  is a parallelogram that deduces  and  intersects at the midpoint of each line.So  the same rule. | 0,25 |
| **Question 5** **(1.0 points).** | **5.1(0.5 points)** |
| **1.** Two numbers that can be distinguished randomly from the set  and multiply together. Ask what is the probability of multiplying by 0 |  |
| Possible cases are:And vice versa, change the position of two numbers in the above pairs of numbers | **0,25** |
| The number of results that occur when choosing two distinct numbers from the given set is 15.2=30 When the product of the two selected numbers is 0, the first term is equal to 0 or the second term is equal to 0, we have 10 such cases.So the probability to look for is  | **0,25** |
| **5.2 (0.5 points)** |  |
| **2.** Given a,b,c are the satisfactory positive numbers: . Demonstrate:  |  |
| Applicable to Phone: AM – GM we have:  (1) | **0,25** |
|  with every a,b,cSimilar proofs: From (1) and (2) The "=" sign occurs when and only when:  | **0,25** |
|  |

**Note:** *If the student presents a different method that is correct, the maximum score will be given in the sections.*