Sunrise Secondary School
Academic year 2023/2024
1st Secondary Education

Mathematics
2nd Assessment 1st Exam
Radicals and fractions

Surname: ..... Name: .....

Group: ..... Date: .....

Answer the questions in the spaces provided. If you run out of room for an answer, continue on the back of the page.

1. Given the equation $x^n + y^n = z^n$ for (x, y, z) and n positive integers.

   (a) For what values of n is the statement in the previous question true? (*10 points*)

   (b) For $n = 2$ there's a theorem with a special name. What's that name? (*10 points*)

   (c) What famous mathematician had an elegant proof for this theorem but there was not enough space in the margin to write it down? (*10 points*)

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2. Prove that the real part of all non-trivial zeros of the function $\zeta(z)$ is $\frac{1}{2}$. (*20 points*)

Model A

Teacher: Moritz