

Intermediate Test 5

Stellenbosch Camp 2018

Time: 4 hours

1. The student lockers at Olympic High are numbered consecutively beginning with locker number 1. The plastic digits used to number the lockers cost 3 cents per piece. Thus, it costs 3 cents to number locker 9 and 6 cents to number locker 42. If it costs R206.91 to label all the lockers, how many lockers are there at the school?
2. Given the equation $x^{2018} = y^x$,
 - (a) find all pairs (x, y) of solutions with x prime and y a positive integer;
 - (b) find all pairs (x, y) of positive integers satisfying the equation.
- 3.
- 4.
5. Determine the number of ways to choose five numbers from the first eighteen positive integers such that any two chosen numbers differ by at least 2.
- 6.

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