

1. Evaluate the following expression and write the answer as a single number without exponents:

$$\left(\frac{8}{343}\right)^{-\frac{2}{3}}.$$

2. Solve x in the following absolute-value equations:

(a) $|4x - 1| = 3$

(b) $|x + 2| = \frac{1}{3}x + 5$

3. Solve x in the following equation:

$$|6x - 5| = |3x + 4|.$$

Hint: Divide your consideration into different cases with respect to x .

4. Let A , B , and C be sets and suppose that there are bijections $f: A \rightarrow B$ and $g: B \rightarrow C$. Prove that $g \circ f: A \rightarrow C$ is a bijection.

5. You are the manager of GRAND HOTEL which is famous of having (countably) infinite number of rooms. The rooms have numbers, the first room has the number 1, the second has number 2, and so on.

Today all rooms are full. Late in the evening, a new customer arrives. How you manage to find a room for this new person?

6. Suppose that the situation is similar than in Exercise 5 and the hotel is full. An infinitely long bus filled with countably infinite number of passengers arrives! You can still find a room for everyone. How you manage to do that?