Try to use built-in object methods to solve some of the problems here

1. Write a functional expression that duplicates each element of a given array.
   Input: [2, 4, 7, 11, -2, 1]
   Output: [2, 2, 4, 4, 7, 7, 11, 11, -2, -2, 1, 1]

2. Write a functional expression that removes all duplicates in a given array.
   Input: [8, 13, 8, 9, 12, 8, 1, 1, 4, 13]
   Output: [1, 4, 8, 9, 12, 13]

3.
   a. Write a function that checks if a given array has odd number of elements.
      Input: [1, 2, 9, 2, 1]
      Output: true

   b. Write a function that counts the number of elements less than the middle element. If the given array has an even number of elements, print out an error message.
      Input: [-1, 8.1, 3, 6, 2.3, 44, 2.11]
      Output: 4

4. Write a function that finds the smallest element of a given array. The function should return an object that contains the smallest value and its last position in the array.
   Input: [1, 4, -2, 11, 8, 1, -2, 3]
   Output: { minValue: -2, minLastIndex: 6 }

5.
   a. Write a function that finds all the elements in a given array less than a given element.
      Input: [2, 3, 8, -2, 11, 4], 6
      Output: [2, 3, -2, 4]
   b. Write a function that finds all the elements in a given array that start with the “pro” substring. The function should be case insensitive.
      Input: [’JavaScript’, ’Programming’, ’fun’, ’product’]
      Output: [’Programming’, ‘product’]

   c. Write a function that expects an array and a callback function that filters out some of the elements. Use functions defined in a) or b) to test it.

6.

a. Write a list (array) of products you usually buy in the supermarket. Write a price and name for each product. For example,

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[
    {name: ‘apples’, price: 100},
    {name: ‘milk’, price: 80},
    {name:’bananas’, price: 150}
]
```

b. Write a function that calculates the total price of your shopping list.
c. Write a function that calculates the average product price of your shopping list. Print this value with the precision of three decimals.
d. Write a function that prints out the name of the most expensive product on your shopping list. Write the name in uppercase.

7.

a. Write a function that checks if a given string is written in all capitals.
b. Write a function that checks if a given string contains any digits.
c. Write a function that checks if a given string is a valid hexadecimal color.
d. Write a function that checks if a given number belongs to the interval from 1900 to 2018.
e. Write a function named *validator* that returns an object with properties *stringValidator*, *passwordValidator, colorValidator*, and *yearValidator* referencing the functions from a) to d).

8. Write a function that calculates a number of days to your birthday.
   Input: 25 February
   Output: 5 days

9. Write a function that for a given departure and arrival time calculates the time the trip takes.
   Input: 8:22:13 11:43:22
   Output: 3 hours 21 minutes 9 seconds

10.

a. Write a constructor function that creates points in space. Each point in space has its own x, y, and z coordinate. For example, (3, 5, 1) can be a point in space.

b. Write a function that calculates the distance between two points in the space.

11.

a. Write a function that generates a random integer value between 5 and 20.
b. Write a function that generates a random integer value between 50 and 100.
c. Write a function which expects a number and a callback generator function and returns an array of numbers produced by the generator function.

12. Write a function that shuffles the elements of a given array.

    Input: [3, 6, 11, 2, 9, 1]

    Output: [6, 2, 9, 1, 3, 11] (it can be any random permutation of the given array)