1,

def find\_missing\_number(arr, n):

expected\_sum = n \* (n + 1) // 2

actual\_sum = sum(arr)

return expected\_sum - actual\_sum

2,

from collections import Counter

def find\_duplicates(arr):

freq = Counter(arr)

return [num for num, count in freq.items() if count == 1]

3,

def is\_sorted(arr):

return all(arr[i] <= arr[i + 1] for i in range(len(arr) - 1))

4,

def find\_majority\_element(arr):

candidate, count = None, 0

for num in arr:

if count == 0:

candidate = num

count += (1 if num == candidate else -1)

if arr.count(candidate) > len(arr) // 2:

return candidate

return None

5,

def is\_balanced\_array(arr):

total\_sum = sum(arr)

left\_sum = 0

for i, num in enumerate(arr):

if left\_sum == total\_sum - left\_sum - num:

return True

left\_sum += num

return False

6,

def find\_pairs\_with\_sum(arr, target):

seen = set()

pairs = []

for num in arr:

complement = target - num

if complement in seen:

pairs.append((complement, num))

seen.add(num)

return pairs