Q1

def is\_disarium\_number(number):

num\_str = str(number)

power = len(num\_str)

sum\_of\_powers = sum(int(digit) \*\* power for digit, power in zip(num\_str, range(1, power + 1)))

return sum\_of\_powers == number

Q2

def is\_disarium\_number(number):

num\_str = str(number)

power = len(num\_str)

sum\_of\_powers = sum(int(digit) \*\* power for digit, power in zip(num\_str, range(1, power + 1)))

return sum\_of\_powers == number

# Find and print Disarium numbers between 1 and 100

disarium\_numbers = [num for num in range(1, 101) if is\_disarium\_number(num)]

print("Disarium numbers between 1 and 100:")

print(disarium\_numbers)

Q3

def is\_happy\_number(number):

seen = set()

while number != 1 and number not in seen:

seen.add(number)

number = sum(int(digit) \*\* 2 for digit in str(number))

return number == 1

Q4

def is\_happy\_number(number):

seen = set()

while number != 1 and number not in seen:

seen.add(number)

number = sum(int(digit) \*\* 2 for digit in str(number))

return number == 1

happy\_numbers = [num for num in range(1, 101) if is\_happy\_number(num)]

print("Happy numbers between 1 and 100:")

print(happy\_numbers)

Q5

def is\_harshad\_number(number):

digit\_sum = sum(int(digit) for digit in str(number))

return number % digit\_sum == 0

Q6

def is\_pronic\_number(number):

for n in range(int(number\*\*0.5) + 1):

if n \* (n + 1) == number:

return True

return False

# Find and print pronic numbers between 1 and 100

pronic\_numbers = [num for num in range(1, 101) if is\_pronic\_number(num)]

print("Pronic numbers between 1 and 100:")

print(pronic\_numbers)