Problem 2.1:

Proof. We prove the contraposive: If n is divisible by 15, then n is also divisible by 3.

Assume is divisible by 15, then n is a multiple of 15. Multiples of 15 are also multiples of 3, therefoer is also a multiple of 3. This finally leads to n is divisible by 3.

Problem 2.2:

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描述已自动生成

图片包含 文字

描述已自动生成

Problem 2.3

a)

isLeapYear :: Int -> Bool

isLeapYear x = if x `mod`4 == 0 && ( not(x `mod` 100 == 0) || x `mod` 400 == 0 )

then True

else False

b)

isLeapYear' :: Int -> Bool

isLeapYear' y | y `mod` 400 == 0 = True

  | y `mod` 100 == 0 = False

| y `mod` 4   == 0 = True

| otherwise        = False

Problem 2.4

a)

rotate :: Int -> [a] -> [a]

rotate 0 list = list

rotate 1 list = tail list ++ [head list]

rotate x list = rotate (x-1) (tail list ++ [head list])

b)