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1.- A)=

Base Case = 1

b\*1 = b\*1

b=b

By IH

By Distributive

B)

Base Case = 1

(1+1) = 1+1

2 = 2

Given

By distributive property of sum

2.- n =

Base Case

i= 0

By Definition

By IH

By distribution

Math

3.- n,

Base case : 0

n(0) = 0,

By Definition

By IH

4.-

Base Case = 0

1

|  |  |  |  |
| --- | --- | --- | --- |
| X1 | X2 | Parity(X1, X2) | X1 X2 |
| 1 | 1 | 0 | 0 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 1 | 1 |
| 0 | 0 | 0 | 0 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X1 | X2 | X3 | Parity(X1, X2, X3) | (X1X2)X3 |
| 0 | 0 | 0 | 0 | 0 |
| 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 1 | 1 |
| 0 | 1 | 1 | 0 | 0 |
| 1 | 0 | 0 | 1 | 1 |
| 1 | 0 | 1 | 0 | 0 |
| 1 | 1 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 | 1 |

(Parity (X1...Xn) | Xn+1)

(X1….Xn | Xn+1)

5.-

Given Gn(i) = Binary

Zn(i) = i(i>>1)

Sn(k) =

Base case for Zn(i) = 0

Z(1) = 1

By definition Sn(x)S(Zx(K)) =

X = y || y <

So Sx(K) = Zy(K-1)

= y(y>>1)S(Zy(K-1))

= S(y)S(Zy(K-1)) By IH

= Replacing S(y) and S(Zy(K-1))

= Arimethic

6.-

By definition

(append(reverse(rest L))(cons(first L) null))

L = (L1…Li..Ln)

R = (Ln... Li-1… L1)

Length = 0 = ‘()

Length = 1 = (cons a ‘())

Base Case should be 0.

If coming from reverse, then.

Ri = Ln-i+1

Li = L-n+1

Base Case = Ln-1

7.-

Extra Credit

Uhm,