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CST 370

Homework 4

1a. Sum of the squares from 1 to n

1b. Multiplication

1c. n

1d. O(n)

2a. The range of values in the array

2b. Comparison

2c. 2n-2

2d. O(n)

3a. 999=1 + 2(n-1)

999=1+2n-2

999=2n-1

2n=100

n=500

Sn=500(1+999)

2

Sn=250(1000)=250000

3b. 1024=2(2)n-1

512=2n-1

ln(512)=ln(2n-1)

ln512=(n-1)ln2

ln512/ln2=n-1

ln512/ln2+1=n

n=10

Sn=2(2)10-2

1

Sn=2046

4. f(1)=1; f(2)=2; f(3)=3; f(4)=5; f(5)=8…

f(n)=f(n-1)+f(n-2), n>=3; f(1)=1, f(2)=2

fibonacci

5a. x(n)=x(n-1)+5

x(1)=0

x(2)=x(n-1)+5=5

x(3)=x(n-1)+5=10

x(4)=x(n-1)+5=15

x(n)=5(n-1)

5b. x(n)=3x(n-1)

x(1)=4

x(2)=3x(n-1)=3\*4=12

x(3)=3 x(n-1)=3\*3\*4=36

x(4)=3 x(n-1)=3\*3\*3\*4=108

x(n)=3^(n-1) \* 4

5c. x(n)=x(n-1) + n

x(0)=0

x(1)=x(n-1) + n=0+1=1

x(2)=x(n-1)+n=0+1+2=3

x(3)=x(n-1)+n=0+1+2+3=6

x(4)=x(n-1)+n=0+1+2+3+4=10

x(5)=x(n-1)+n=0+1+2+3+4+5=15

x(n)=1+2+3…+n=n(n+1)

2