x is sum of integer in m.

Procedure X (m : m is a list of n integers

result = 0

for i = 1 to n

result = result + m[i]

return result

m = 3 2 1 6 4 8

m1 m2 m3 m4 m5 m6

i	result
1	0+3 = 3
2	3+2 = 5
3	5+1 = 6
n	X

Pg 202

4) largest diference with the int that follows it

m = 2, 3, 1, 4, 6, 8

1 2 3 3 2

Procedure X (m is a list of int)

dif = 0

~~x~~ = 0

for i = 2 to n

x = m[i+1] - m[i]

if dif < x

dif = x

return dif.

$1 < \log n < n < n \log n < n^2 < 2^n < n!$

$3n^2+1 \in O(n^3)$

$\in O(n^4)$

$(\underbrace{1\ 3\ 4\ 6\ 5\ 12}_{\text{sequence}}\ ;\ \underbrace{1}_{\text{integer}})$

N

best case: it finds the integer at the first try

worst case: it doesn't find the integer

average case: the integer is in the middle

Pg 229

1)
```
t := 0
for i := 1 to 3
for j := 1 to 4
    t := t + ij
```

$g(x) = 1$

$f(x) \in O(1)$

$f(n) = 12$

2) $O n^2$

t	i	j
0	1	1
2	1	2

3.2

5) show $x^2+1 / x+1$ is $O(x)$

$$\lim \frac{\frac{x^2+1}{x+1}}{x} = \frac{x^2+1}{x(x+1)}$$

$$\lim_{x \to \infty} \frac{x^2+1}{x^2+x} = 1 < \infty \quad \frac{x^2+1}{x+1} \in O(x)$$