Section 3.1

Ex.20

Procedure:

```
max = -∞
min = ∞
for each integer in the sequence:
  if i > max;
    max = i;
  if i < min;
    min = i
```

Ex.42

```
for i from 0 to n-1
minindex = i
for j from i+1 to n-1
if: ~~j < ar~~ arr[j] > arr[minindex]
  minindex = j
swap arr[j] and arr[minindex]
```

Section 3.2

Ex.2

a.) $f(x)=17x+11$ is $O(x^2)$ Can take $C=17$, $k=1$ as witness to show that

b.) $f(x)=x^2+1000$ is $O(x^2)$ Can take $C=1002$, $k=1$ as witness to show that

c.) $f(x)=x\log x$ is $O(x^2)$ can take $C=1$, $k=1$ as witness to show that

d.) $f(x)=x^4/2$ is not $O(x^2)$

e) $f(x)=2^x$ is not $O(x^2)$

f. $f(x)=\lfloor x \rfloor \cdot \lceil x \rceil$ is not $O(x^2)$

Ex.4

when $x>3$, $2^{x+1} < 3^x$, Can take $C=1$, $k=3$ as witness to show that ~~$f(x)$ is $O($~~ 2^{x+1} is $O(3^x)$

Ex.22 ~~Arrange: $\sqrt{n}$, $1000\log n$, $n\log n$, $2n!$...~~

Arrange: $(1.5)^n$, n^{100}, $(\log n)^3$, $\sqrt{n}\log n$, 10^n, $(n!)^2$, $n^{99}+n^{88}$

① $\sqrt{n}\log n$

② $(\log n)^3$

③ $(1.5)^n$

④ $n^{99}+n^{88}$

⑤ 10^n

⑥ n^{100}

⑦ $(n!)^2$

Ex-26

a.) f(a) is ~~O(n)~~ $O(n^3 \log n)$

b). f(b) is $O(n^5)$

c. f(c) is ~~O(n^n)~~ $O(n^n \cdot n!)$