



2. (a)

(b)

3. (a)

(b) **f1** is faster for  $N \dots$   
**f2** is faster for  $N \dots$

(c)

(d1)

(d2)

4(a).

```
def closest(l:[int]) ->int:
```

```
    a = set() _____
```

```
    for i in range(len(l)):
```

```
        for j in range(len(l)):
```

```
            if i != j:
```

```
                a.add(abs(l[i]-l[j])) _____
```

```
    return min(a) _____
```

(b)

(c)

```
def closest(l:[int]) ->int:
```

```
    a = sorted(l) _____
```

```
    min = None _____
```

```
    for i in range(len(a)-1): _____
```

```
        if min==None or a[i+1]-a[i]<min: _____
```

```
            min = a[i+1]-a[i] _____
```

```
    return min; _____
```

(b)

(c)

5. (a)

(b)

6.

N	Time: Method 1	Time: Method 2	Time: Method 3
100	300	20	20
200	604	76	22
400	1,196	325	20
800	2,395	1,178	19
1,600			
<b>Complexity Class Estimate</b>			