1. Consider f,g,h : $Z^+ \rightarrow R$ with f(n) = 2n +1, g(n) = n^2-1 and h(n)=1-n for all n in Z^+. Which of the following statements is **false**?
(3 points)

A. h is *O*(f)

B. f is *O*(g)

✓ C. g is O(h)

D. h is *O*(g)

2. What is the runtime complexity of the following C++ code fragment:

```
sum=0; i=n;
while (i > 0) {
   sum++;
   i=i-2; }
```

(3 points)

A. $O(n^2)$

B. $O(\log_2 n)$

C. $O(1)$

✓ D. $O(n)$

3. Which list of runtime complexities is in the correct order from shortest (left) to longest (right)?
(3 points)

✓ A. $(\log_2 n)$, n, $n(\log_2 n)$, n^2, 2^n

B. $(\log_2 n)$, n, n^2, $n(\log_2 n)$, 2^n

C. n, $(\log_2 n)$, $n(\log_2 n)$, n^2, 2^n

D. n, $(\log_2 n)$, n^2, $n(\log_2 n)$, 2^n