CS325 (Winter 2016) Quiz 1

ID: _____   Name:_____

1. (2pts each) In each case, indicate True (T) or False (F) for $f = O(g)$, $f = \Omega(g)$, $f = \Theta(g)$.

	$f(n)$	$g(n)$	$f = O(g)$	$f = \Omega(g)$	$f = \Theta(g)$
(a.)	$n^2 \log n$	$1500n^3$	T	F	F
(b.)	$1.2 + 1.2^2 + \cdots + 1.2^n$	1.2^{n+2}	T	T	T
(c.)	3^n	n^3	F	T	F
(d.)	$n^{\log_4 5}$	$n^{\log_2 5}$	T	F	F

2. (3 pts) Consider the following pseudo-code.

```
function f(n)
1.      if n > 1:
2.          print_a_line("still going")
3.          f(n/2)
4.          f(n/2)
```

Let $T(n)$ denote the number of lines printed for input n. Write a recurrence relation for $T(n)$.

T(n)=2T(n/2)+1

3. (4pts) Solve the recurrence relation $T(n) = T(n-2) + c$

$$T(n)=T(n-4)+2c=T(n-6)+3c=...=T(0)+nc/2=O(n)$$