

Recursion Worksheet 1

1. Trace the following for Wow(64). What is the output? _____

```
void Wow (int n)
{
    if (n > 1)
        Wow (n / 2);
    System.out.print(n + " ");
}
```

2. Trace the following for 41, 31, and 22 and then explain what the function is doing. Show each step using the tracing method shown in class for recursion.

```
void Mystery(int n)
// precondition:      n ≥ 0
// postcondition:     Mystery???
{
    if (n < 2)
        System.out.print(n);
    else {
        Mystery(n/2);
        System.out.print(n % 2);
    }
}
```

3. Solve for $F(F(2) + F(5))$

```
int F(int x)
{
    if (1==x || 3==x)
        return x;
    else
        return x * F(x-1);
}
```

- | |
|--|
| <p>a) 62
 b) $5! + 2!$
 c) $(5! + 2!)!$
 d) $(7!)!$
 e) $(62!)/(2!)$</p> |
|--|

4. Evaluate $F(6)$ given

$F(x)$	$=$	$F(x-2) - 2 * F((x-1) \% 3) + 1$	when x is even and positive
	$=$	$x + 1$	when x is odd
	$=$	0	otherwise

Show work:

Answer: _____