COMPUTER SCIENCE **NAME _____**

Recursion #1

Find each of the following.

1) Find $f(6)$:

$$f(x) = \begin{cases} f(x-1)+x & \text{when } x > 1 \\ x-2 & \text{when } x = 1 \end{cases}$$

2) Find $f(5)$:

$$f(x) = \begin{cases} f(x-1)+x & \text{when } x > 1 \\ x-2 & \text{when } x <= 1 \end{cases}$$

3) Find $f(7)$:

$$f(x) = \begin{cases} f(x+3)+4 & \text{when } x <= 12 \\ 3 & \text{when } x > 12 \end{cases}$$

4) Find $f(2)$:

$$f(x) = \begin{cases} f(x-1)+x & \text{when } x > 0 \\ 2 & \text{when } x = 0 \\ 5 & \text{when } x < 0 \end{cases}$$

5) Find $f(6)$:

$$f(x) = \begin{cases} f(f(x-2))+1 & \text{when } x > 1 \\ 2 & \text{when } x = 1 \\ 1 & \text{when } x = 0 \end{cases}$$

6) Find $f(238)$:

$$f(x) = \begin{cases} f(x-64)+100 & \text{when } x >= 64 \\ f(x-8)+10 & \text{when } 8 <= x < 64 \\ x & \text{when } x < 8 \end{cases}$$

7) Find $f(f(f(2)))$:

$$f(x) = \begin{cases} x-1 & \text{when } x >= 4 \\ 2x & \text{when } 0 <= x < 4 \\ 1/x & \text{when } x < 0 \end{cases}$$

8) Find $f(5)$: *GIVEN:* $p(x, y) = x * y$

$$f(n) = \begin{cases} 1 & n = 0 \\ p(n, f(n-1)) & \text{otherwise} \end{cases}$$

9) Find $f(-4)$:

$$f(x) = \begin{cases} 2(f(x+2)) - f(x+1) + 1 & \text{when } x < 0 \\ 1 & \text{when } x = 0 \\ 0 & \text{when } x > 0 \end{cases}$$

10) Find $f(12, 6)$:

$$f(x, y) = \begin{cases} f(x-y, y+1) + 2 & \text{when } x > y \\ x + y & \text{otherwise} \end{cases}$$

11) Find $f(6, 5)$:

$$f(x, y) = \begin{cases} 2 + f(x-3, y-1) & \text{when } x > y \text{ and } x > 0 \\ 1 + f(y, x) & \text{when } y >= x \text{ and } x > 0 \\ 0 & \text{when } x <= 0 \end{cases}$$

12) Find $f(4, 1)$:

$$f(x, y) = \begin{cases} f(x, y+1) - 8 & \text{when } x >= y \\ 4 & \text{when } x < y \end{cases}$$

13) Find $f(3, 5)$:

$$f(a, n) = \begin{cases} a & \text{when } n = 1 \\ a * f(a, n-1) & \text{when } n > 1 \end{cases}$$

14) Find $f(0, 2)$:

$$f(x, y) = \begin{cases} f(x+1, y) + 2 & \text{when } x < y \\ 10 & \text{when } x = y \\ 0 & \text{when } x > y \end{cases}$$