Cody Problem 69. Find the peak 3n+1 sequence value

A Collatz sequence is the sequence where, for a given number n, the next number in the sequence is either n/2 if the number is even or 3n+1 if the number is odd. See Problem 21

for more information.

Let c(n) be the sequence for n, and p(n) be the peak value of that sequence. For a given threshold nmax, find the highest peak value max(p(n)) for all Collatz sequences starting with integers between 1 and nmax.

Scratch Pad

```
nmax = 5;

peakOfPeaks(nmax)
```

```
ans = 16
```

```

nmax = 10;

peakOfPeaks(nmax)
```

```
ans = 52
```

Solution

```
function pmax = peakOfPeaks(nmax)

    pmax = 0;
    for i = 1:nmax
        max_c = max(Collatz(i));
        if max_c > pmax
           pmax = max_c;
        end
    end

    function c = Collatz(n)
        c = [n];
        buff = n;
        while buff ~= 1
            if mod(buff, 2) == 0
                buff = buff/2;
                c = [c, buff];
            else
                buff = 3*buff+1;
                c = [c, buff];
            end
        end
    end
```

```
end
```