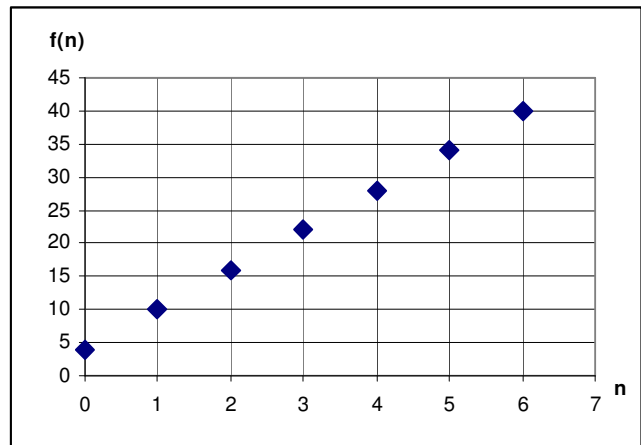


## What Have We Learned?

We have considered three major types of functions. Let's review some of what we have observed.

**Example 1.** Consider the relationship illustrated in the following table and graph.

$\Delta n$	$n$	$f(n)$	$\Delta f(n)$	$\Delta f(n)/\Delta n$
	0	4		
1	1	10	6	
1	2	16	6	
1	3	22	6	
1	4	28	6	
1	5	34	6	
1	6	40	6	

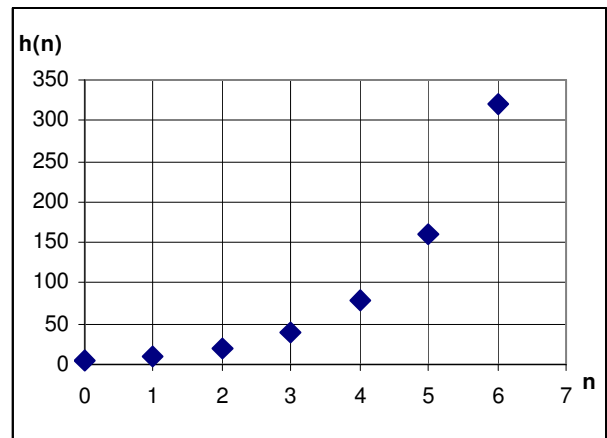


**Define the relationship recursively with a difference equation.**

**Define the relationship explicitly with a functional equation.**

**Example 2.** Consider the relationship illustrated in the next table and graph.

$\Delta n$	$n$	$h(n)$	$\Delta h(n)$	$h(n)/h(n-1)$
	0	5		
1	1	10	5	
1	2	20	10	
1	3	40	20	
1	4	80	40	
1	5	160	80	
1	6	320	160	



**Define the relationship recursively with a difference equation.**

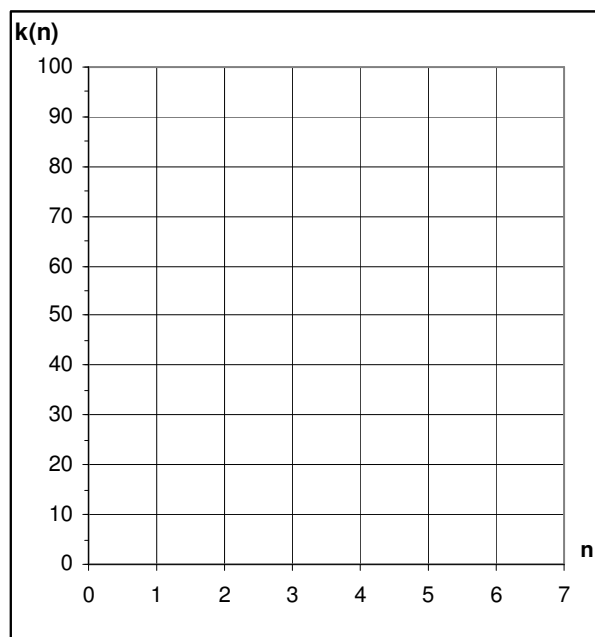
**Define the relationship explicitly with a functional equation.**

**Example 3.** Consider the relationship defined by the following table. Complete the table and graph.

$\Delta n$	$n$	$k(n)$	$\Delta k(n)$	$\Delta\Delta k(n)$
1	1	8		
1	2	17		
1	3	30		
1	4	47		
1	5	68		
1				

Define the relationship recursively with a difference equation.

Define the relationship explicitly with a functional equation.



**Example 4.**  $y = mx + b$

$x$	$y$	$\Delta y$
0		
1		
2		
3		
4		

**Example 5.**  $y = A(r)^x$

$x$	$y$	ratio
0		
1		
2		
3		
4		

**Example 6.**  $y = ax^2 + bx + c$

$x$	$y$	$\Delta y$	$\Delta\Delta y$
0			
1			
2			
3			
4			

