

Key

3.2 Practice

For each of the tables, do the following:

- Compute the first and second differences
- Identify the function in which the table is representing
- Write the explicit equation for the table
- Solve for when $x = 42$

1.

X	Y	1 st difference	2 nd difference
-2	2	} -3 } -1 } +1 } +3	} +2 } +2 } +2
-1	-1		
0	-2		
1	-1		
2	2		

Constant/Linear/quadratic/exponential?

Explicit equation: $y = x^2 - 2$

$$-1 = 1^2 + b - 2$$

$$-1 = -1 + b \quad b = 0$$

$$f(42) = 42^2 - 2 = \boxed{1762}$$

2.

X	Y	1 st difference	2 nd difference
-2	-2	} +4 } +4 } +4 } +4	0
-1	2		
0	6		
1	10		
2	14		

Constant/Linear/quadratic/exponential?

Explicit equation: $y = 4x + 6$

$$f(42) = 4(42) + 6 = \boxed{174}$$

3.

X	Y	1 st difference	2 nd difference
-12	7	} 0 } 0 } 0	
-7	7		
-2	7		
3	7		
8	7		

Constant/Linear/quadratic/exponential?

Explicit equation: $y = 7$

$$f(42) = 7$$

4.

X	Y	1 st difference	2 nd difference
-1	16	} -14	} +10
0	2		
1	-2	} -4	} +10
2	4	} +6	} +10
3	20	} +16	} +10
4	46	} +26	

Constant/Linear/quadratic/exponential?

Explicit equation: $y = 5x^2 - 9x + 2$

$$-2 = 5(1)^2 + b(1) + 2 \quad -2 = 7 + b$$

$$-2 = 5 + b + 2 \quad b = -9$$

$f(42) = 5(42)^2 - 9(42) + 2 = 8444$

5.

X	Y	1 st difference	2 nd difference
0	0	} 4	} -2
1	4		
2	6	} 2	} -2
3	6	} 0	} -2
4	4	} -2	} -2
5	0	} -4	} -2
6	-6	} -6	} -2

Constant/Linear/quadratic/exponential?

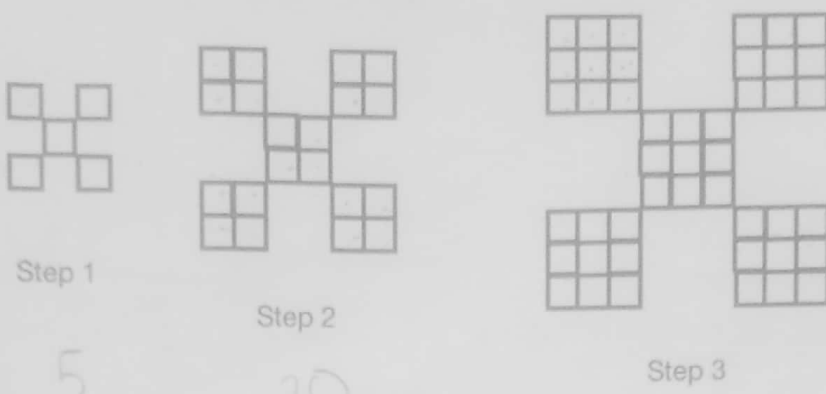
Explicit equation: $y = -x^2 + 5x$

$$4 = -(1) + b$$

$$b = 5$$

$f(42) = -(42)^2 + 5(42) = -1554$

6. Create a table to represent the following picture. Then find the first and second difference, and write the explicit equation and solve for when $x = 20$



5 20

a.

X	Y	1 st difference	2 nd difference
0	5	5	10
1	20	15	10
2	45	25	10
3	80	35	10
4	125	45	10
5	180	55	

B. Constant/Linear/quadratic/exponential?

c. Explicit equation: $y = 5x^2$

d. $f(20) = 5(20)^2 = 2000$

Simplify.

7) $(-6 - 4r) + (5r - 7)$
 $r - 13$

8) $(-7n - 8n^4) + (7n + 6n^4)$
 $-2n^4$

9) $(8n^3 - 3n^4) + (6n^3 + 4n^4)$
 $14n^3 + n^4$

10) $(2x^2 + 3x) + (8x^2 + x)$
 $-6x^2 + 4x$

11) $(-6b^4 - b) + (+3b^4 + 2b^3)$
 $-3b^4 - 2b^3 - b$

12) $(4p^4 - 4) + (+4p^2 + 2)$
 $4p^4 + 4p^2 - 2$

Find each product.

13) $(8a + 2)(5a - 1)$

$$40a^2 - 8a + 10a - 2$$

$$= \boxed{40a^2 + 2a - 2}$$

14) $(4v - 5)(2v - 2)$

$$8v^2 - 8v - 10v + 10$$

$$= \boxed{8v^2 - 18v + 10}$$

15) $(2n - 8)(2n - 6)$

$$4n^2 - 12n - 16n + 48$$

$$= \boxed{4n^2 - 28n + 48}$$

16) $(2n - 4)(3n + 7)$

$$6n^2 + 14n - 12n - 28$$

$$= \boxed{6n^2 + 2n - 28}$$

17) $(x + 4)(7x + 6)$

$$7x^2 + 6x + 28x + 24$$

$$= \boxed{7x^2 + 34x + 24}$$

18) $(3p + 4)(p - 5)$

$$3p^2 - 15p + 4p - 20$$

$$= \boxed{3p^2 - 11p - 20}$$