

Determine the 1st and 2nd differences for each quadratic shown.

$$y = 3x^2$$

x	y	1st	2nd
-2	12		
-1	3	-9	6
0	0	-3	6
1	3	3	6
2	12	9	6
3	27	15	

$$y = -2x^2 + 5$$

x	y	1st	2nd
-2	-3		
-1	3	6	-4
0	5	2	-4
1	3	-2	-4
2	-3	-6	-4
3	-13	-10	

The value of the second difference in a quadratic relation is double the coefficient of x^2

Solve a System of linear Equations

Solve the following system of equations

$$2x + y = 7 \quad \textcircled{1} \text{ plug } x=3 \text{ into } \textcircled{2}$$

$$x + y = 4 \quad \textcircled{2}$$

Solve by elimination

$$\begin{array}{r} 2x + y = 7 \\ - x + y = 4 \\ \hline x + 0 = 3 \end{array}$$

$$\boxed{x=3}$$

The solution is (3,1)

$$\begin{array}{l} 3 + y = 4 \\ \boxed{y=1} \end{array}$$

$$4b - 3a = -13 \quad \textcircled{1}$$

$$b - a = -9 \quad \textcircled{2}$$

multiply $\textcircled{2}$ by 3

$$4b - 3a = -13$$

$$3b - 3a = -27$$

$$\hline b - 0 = 14$$

$$\boxed{b=14}$$

plug $b=14$ into $\textcircled{2}$

$$14 - a = -9$$

$$-a = -23$$

$$\boxed{a=23}$$

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Chapter 6

Discrete Functions

Sequences as Discrete Functions

Sequences

Add the next 2 terms to each sequence of numbers:

3, 5, 7, 9... , 11, 13

2, 4, 8... , 16, 32

27, 9, 3... , 1, $\frac{1}{3}$ ✓

1, 1, 2, 3, 5... 8, 13, 21, 34, 55, ...