

Example of Divided Differences

x	y	1 st diff	2 nd diff	3 rd diff
0	1	$\frac{23-1}{1-0} = 22$	$\frac{48-22}{2-0} = \frac{46}{2} = 23$	$\frac{-15-23}{4-0} = \frac{-28}{4} = -7$
1	23	$\frac{71-23}{2-1} = 48$	$\frac{3-48}{4-1} = \frac{-45}{3} = -15$	
2	71	$\frac{77-71}{4-2} = \frac{6}{2} = 3$		
4	77			

Now, add a point

x	y	1 st	2 nd	3 rd	
0	1	22			
1	23		13		
2	71	48		-7	
4	77	3	-15		
-1	17	$\frac{17-77}{-1-4} = \frac{-60}{-5} = 12$	$\frac{12-3}{-1-2} = \frac{9}{-3} = -3$	$\frac{-3-(-7)}{-1-1} = \frac{4}{-2} = -2$	$\frac{-6-(-7)}{-1-0} = \frac{1}{-1} = -1$