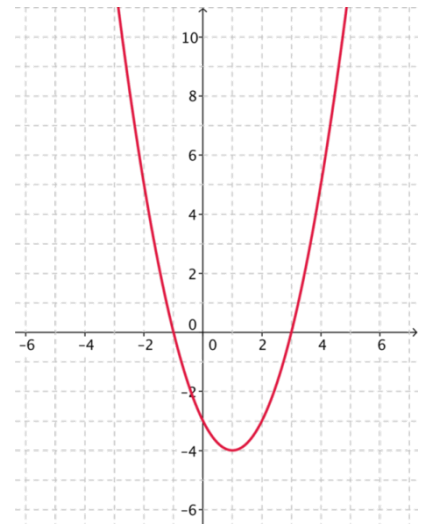


1. For the table of data given below, calculate first and second differences (if necessary) to determine whether the relation is linear, quadratic or neither. [2]

x	y	1 st Diff	2 nd Diff
-3	25		
-2	9		
-1	-1		
0	-5		
1	-3		
2	5		

2. Identify the key features of the parabola shown to the right. [4]

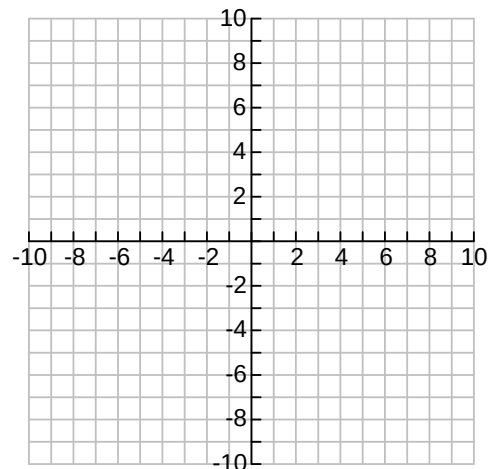
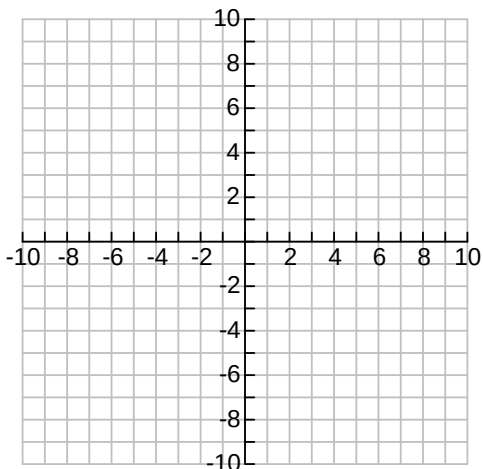
Feature	Answer
Vertex	
Equation of the Axis of Symmetry	
Direction of Opening	
Minimum or Maximum?	
Value of min/max	
y-intercept	
Zeros (x-intercepts)	



3. a) For each of the following, state the transformation(s) to the graph of $y = x^2$, using proper math terminology. [3]
 b) Graph each of the following. Include at least 5 exact points. [4]

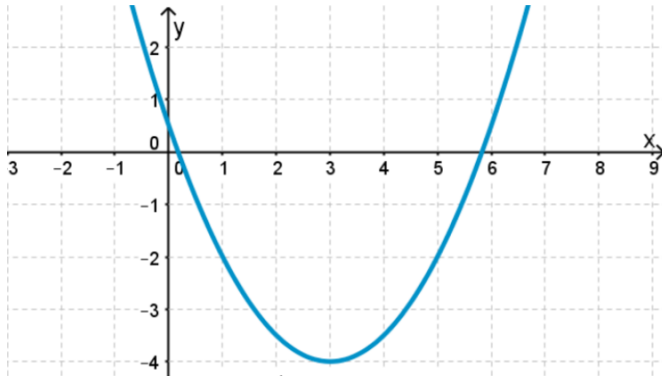
i) $y = (x+1)^2 - 3$

ii) $y = -2(x-3)^2 + 5$



4. The graph of $y = x^2$ is vertically compressed by a factor of 4, translated 8 units to the left and 5 units down. Write the equation of this parabola in **vertex form**. [2]

5. Determine the equation in **vertex form** of the parabola shown below (non-algebraic solution). [2]



6. **Algebraically** determine, in **vertex form**, the equation of the quadratic function having vertex $(-3, 0)$ and passing through the point $(2, 4)$. [2]

7. A baseball is hit. Its height h , in metres, after t seconds is $h = -4.9(t - 3)^2 + 45$. [3]

a) What is the maximum height the ball reaches? _____

b) When is this height reached? _____

c) What is the height of the ball at the instant it is hit?