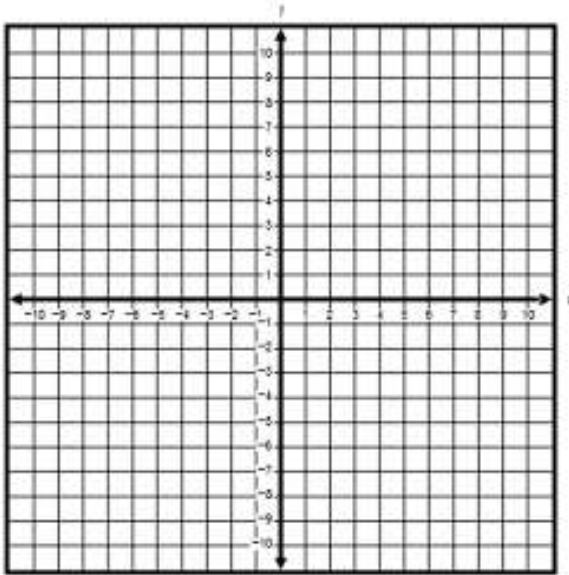


To prepare for a test, three students have been asked to present a review lesson to their class on sketching the graph of a parabola in the xy -coordinate plane. They decide to use the quadratic function $f(x) = 4x^2 + 8x - 5$ in their presentation. Each student will use algebra to explain how to find one of three key features of the graph.

- * Angella rewrites the equation in factored form
- * Benjamin rewrites the equation by completing the square
- * Carla evaluates $f(0)$

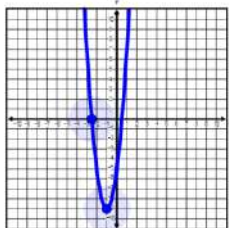
Part A: Sketch the graph of the function on the xy -coordinate grid shown.

(show key features of your graph, key features include intercepts, Maximum/Minimum...)



Part B: Describe how each student's work contributes to finding the key features of the graph.

Algebra 2 December ECR
Score Rubric

Part A	
Score	Description
2	<p>2 essential elements of the response:</p> <ul style="list-style-type: none"> * Showing intercepts (x and y intercepts) * Showing maximum or minimum <p>Sample of student response:</p> 
1	Student response includes 1 of 2 elements
0	Student response is incorrect or irrelevant
Part B	
Score	Description
3	<p>Student response includes the following 3 elements.</p> <ul style="list-style-type: none"> • Reasoning component = 3 point <ul style="list-style-type: none"> o The equation is correctly rewritten in factored form and the key feature is correctly explained. o The equation is correctly rewritten by completing the square and the key feature is correctly explained. o $f(0)$ is correctly evaluated and the key feature is correctly explained. <p>Sample Student Response:</p> <p>Student reasons that Angela has factored the expression in order to find the x-intercepts of the function.</p> $f(x) = 4x^2 + 8x - 5$ $f(x) = (2x - 1)(2x + 5)$ <hr/> <p>If the function is set equal to 0, then</p> $0 = (2x - 1)(2x + 5)$ $2x - 1 = 0 \text{ and } 2x + 5 = 0$ $x = \frac{1}{2} \text{ and } x = -\frac{5}{2}$ <p>Therefore the x-intercepts are $(\frac{1}{2}, 0)$ and $(-\frac{5}{2}, 0)$.</p> <p>Student reasons that Benjamin completes the square on the function in order to find the vertex.</p> $f(x) = 4x^2 + 8x - 5$ $f(x) = 4(x^2 + 2x) - 5$ $f(x) = 4(x^2 + 2x + 1) - 5 - 4$ $f(x) = 4(x + 1)^2 - 9$ <p>Therefore the vertex is $(-1, -9)$.</p> <p>Student reasons that Carla evaluates $f(0)$ to find the y-intercept at $(0, -5)$.</p> <p>Note: The response does not need to find the value of the key feature in order to identify the key feature.</p>
2	Student response includes 2 of 3 elements
1	Student response includes 1 of 3 elements
0	Student response is incorrect or irrelevant

Genesis Convert Table

Task Point	Genesis Score
0	55
1	59
2	69
3	79
4	89
5	100