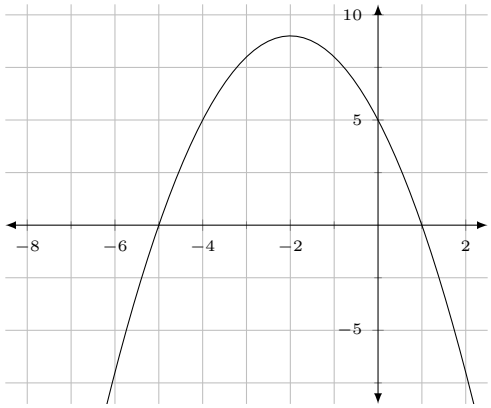
Knowledge: 11 Thinking: 8 Application: 9
Communication: 6 + 2 (form) Total: 36

Knowledge and Understanding

Multiple choice: circle the *most correct answer*.

1. Identify the zero(s) for the graph below [1]



a.) $(-2, 9)$ b.) $(-5, 0)$ and $(1, 0)$

c.) $(0, 5)$ and $(1, 0)$ d.) $(0, 1)$ and $(0, -5)$

2. $x = 5$ is a solution to which quadratic equation below? [1]

a.) $(x - 3)(x + 5) = 0$ b.) $(x + 3)(x - 4) = 0$

c.) $(x - 6)(x + 6) = 0$ d.) $(x - 1)(x - 5) = 0$

3. What direction is the parabola $y = 5x^2 - 2x + 3$ opening? [1]

a.) Up b.) Down c.) Sideways d.) Indeterminable

4. Using finite differences, determine whether the relation below is linear, quadratic, or neither. [2]

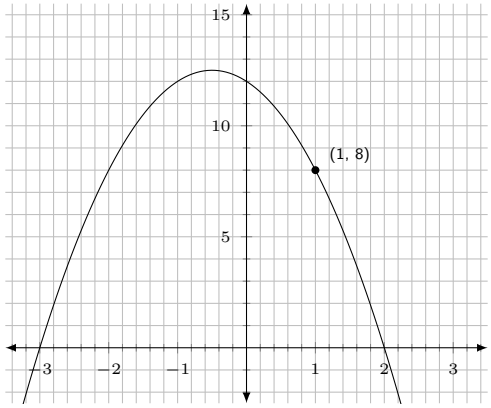
x	y
0	0
1	2
2	8
3	18
4	32

5. Use the quadratic formula to solve the equation $x^2 - 3x - 3 = 0$. [3]

6. Solve the equation $x^2 + 2x - 8 = 0$ by factoring. [3]

Application Section

7. Given the parabola below, determine the equation in factored form. [2]



8. A photograph measures 21cm by 15cm. A strip of constant width is to be cut from each side of the photo, so the area is reduced to 216cm^2. What is the width of the cut? Include a diagram and round to one decimal place. [5]

9. Use the mid-value method to find the vertex of the parabola $y = -2(x - 2)(x + 4)$. [2]

Thinking Section

10. The parabola $y = x^2bx + c$ has two x-intercepts being $x = \dfrac{4 \pm \sqrt{13}}{2}$. Use the quadratic formula to find the values of a, b, c. [4]

11. A parabola with the equation $y = ax^2 + bx - 16$ has an axis of symmetry at $x = 5$ and one of its x-intercepts at $x = 8$. Determine the values of a and b. [4]

Communication Section

12. Explain what must be true about the vertex and direction of opening for a parabola to have only one x-intercept. Include a diagram. [3]

13. Circle the error, and explain how you could solve it correctly. [3]

Solve:
$x^2 - x = 0$

Solution:
$x(x-1) = 0$

$x - 1 = 0$

$x = 1$