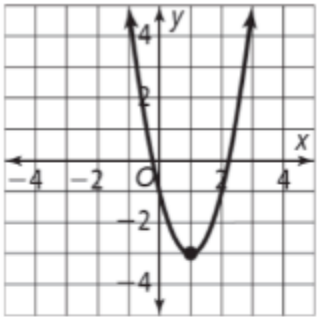
مدارس البكالوريا
BACCALAUREATE SCHOOLS

Name: **9th Grade Math Worksheet** **Teacher : Aseel Zaghloul**

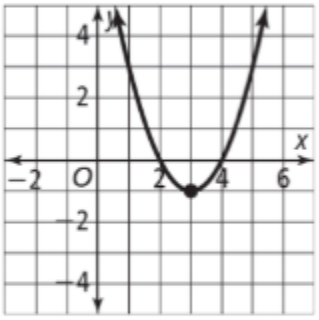
Final Review : Quadratic Functions in Vertex Form

Question #1: Identify the vertex, the axis of symmetry, and the direction of the graph for each of the following parabolas.

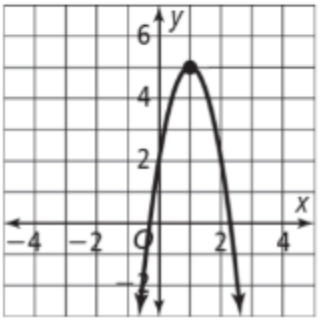
1.



2.



3.



Question #2: Write the function for the graphs in Exercises 1–3 in vertex form.

4. **Graph in Exercise 1**
5. **Graph in Exercise 2**
6. **Graph in Exercise 3**

Question#3:

How does the value of *a*, *h*, or *k* affect the vertex for the graph of each function compared to the parent function $f(x) = x^2$?

7. $g(x) = (x - 8)^2$
8. $h(x) = (x + 4)^2 + 12$
9. $j(x) = -\frac{1}{2}x^2 + 8$

Identify the vertex of the graph of each function.

10. $y = 4x^2 - 2$
11. $y = -2(x + 4)^2 - 6$
12. $y = x^2 + 5$
13. $y = (x - 12)^2$
14. $y = -9(x + 3)^2 - 3$
15. $y = -3x^2 - 7$
16. Graph the function $f(x) = 4(x - 2)^2 + 4$. Find the vertex and axis of symmetry.

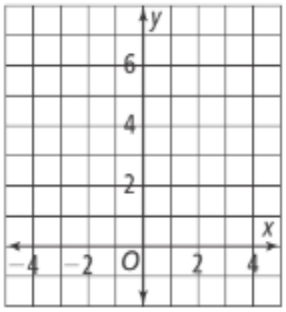
مدارس البكالوريا
BACCALAUREATE SCHOOLS

Name: **9th Grade Math Worksheet** **Teacher : Aseel Zaghloul**

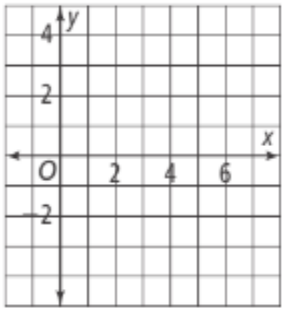
Final Review : Quadratic Functions in Standard form

Graph each function. Identify the *y*-intercept, axis of symmetry, and vertex of each function. Does the vertex represent a maximum or minimum value?

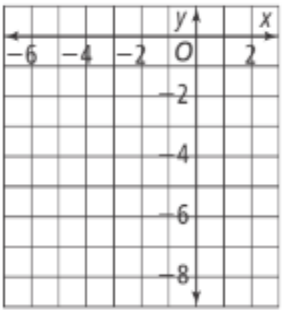
1. $f(x) = x^2 + 1$



2. $f(x) = -x^2 + 4x - 2$



3. $f(x) = 2x^2 + 4x - 6$



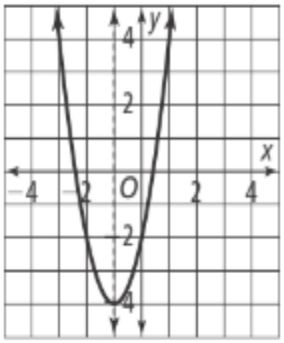
Find the axis of symmetry using the formula $x = \frac{-b}{2a}$.

4. $f(x) = -9x^2 + 1$

5. $f(x) = -2x^2 + 8x - 9$

6. $f(x) = 4x^2 + 24x + 131$

7. The parabola shown has the form $y = ax^2 + bx + c$.



a. What is the axis of symmetry?

b. Look at the width of the parabola to find *a*.

c. Use the formula $x = \frac{-b}{2a}$ to find *b*.

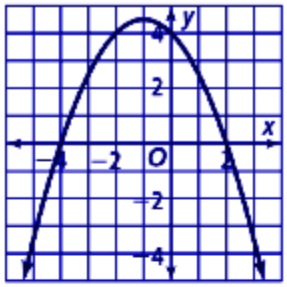
d. What is the equation of the parabola?

مدارس البكالوريا
BACCALAUREATE SCHOOLS

Name:	9th Grade Math Worksheet Final Review : Solving Quadratic Equations	Teacher : Aseel Zaghloul

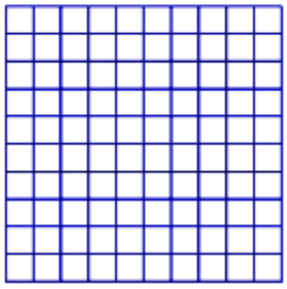
Question #1: Solve by graphing:

1. Use the graph to find the solutions of $-\frac{1}{2}x^2 - x + 4 = 0$.



2. The equation $ax^2 + bx + c = 0$ has no real solutions. Which statement about the graph of $f(x) = ax^2 + bx + c$ could be true?
   - Ⓐ It could pass through the origin.
   - Ⓑ Its vertex could be at (–6, 0).
   - Ⓒ It could have a maximum at (–3, 2).
   - Ⓓ It could have a minimum at (0, 4).

3. Solve the equation $x^2 - 2x - 3 = 0$ by graphing.



Question #2: Solve by factoring:

Solve each equation.

1. $(x - 5)(x + 7) = 0$
2. $(2x - 7)(5x + 3) = 0$
3. $x(x + 4)(5 - 2x) = 0$

Solve each equation by factoring.

4. $x^2 - 4x - 21 = 0$
5. $x^2 + 100 = 20x$
6. $6x^2 = x + 15$

Question #3 : Solve by using square root:

Solve each equation by inspection.

1. $x^2 = 64$
2. $x^2 = -169$
3. $x^2 = 108$
4. $x^2 = 200$

Solve each equation.

5. $4x^2 = 81$
6. $-3x^2 = -54$
7. $-7x^2 = 49$
8. $\frac{1}{5}x^2 = 80$

مدارس البكالوريا
BACCALAUREATE SCHOOLS

Name:	9th Grade Math Worksheet Final Review : polynomials	Teacher : Aseel Zaghloul

Question #1: adding and subtracting polynomials:

A) What is the name of each polynomial, based on the degree and the number of terms?

1. $-4x^2y$
2. $3x^4 - 2x^3 + 5x^2 + 6x - 12$
3. $x^2 + 5x - 4$

B) Write each polynomial in standard form.

4. $3x^2 - 5x - 4 + x^3$
5. $-7 + 2x - x^5 + 4x^4 + 2x^3$
6. $9 - x^2 + 5x$

C) Combine like terms and write each expression in standard form.

7. $-5y + 3y^2 + 2y - 2y^2 - 9$
8. $-2x^2 + x + 5x^3 + 4x + 2x^2$
9. $x^2 - 5 + 2x + x^2$

Question #2: multiplying polynomials:

A) Find each product.

1. $(x + 4)^2$
2. $(2x - 3)^2$
3. $(4y + 7)^2$

B) Write each product in standard form.

7. $(x + 7)(x - 7)$
8. $(3x + 4)(3x - 4)$
9. $(5y - 1)(5y + 1)$