

# **HONORS Algebra II**

## **Summer Preparation Packet 2021-2022**

This preparation packet is designed for you to practice the skills you must master prior to entering the Honors Algebra II classroom.

### **Please follow these directions very carefully.**

1. All students must complete the problems in this packet **independently and document their OWN work!!** You may collaborate and share ideas with other students, but you alone are responsible for documenting your own work.
2. **DUE DATE: SEPTEMBER 9<sup>th</sup> (A day) or SEPTEMBER 10<sup>th</sup> (B day) - THE FIRST DAY OF SCHOOL FOR THE 2021-2022 SCHOOL YEAR.**
3. **This review assignment will be collected the first day and weighted as a double homework grade. Late assignments will NOT be accepted for credit.**
4. You are required to make a **photocopy** (or take pictures) of the project **before** you come to the first day of class so you can correct your answers during class discussion that day.
5. There will be an assessment on all material covered in this packet.
6. It is recommended that you work on this assignment throughout the summer, periodically reviewing the material. Doing it all at the start of summer or waiting until the end of summer to begin this packet is strongly discouraged.
7. You may use websites such as Khan Academy to assist you, but understand that copying work from a math app will not help you the day of the assessment or during the year.
8. **Please use pencil and show all work neatly and clearly to receive full credit.** Put answers on the line (if provided) or circle the final answer in **RED**.
9. You may use a scientific calculator only on these problems. **No** graphing calculators.

Best wishes for a happy and safe summer. I'm looking forward to seeing you in September.

1. **FACTOR** each of the following completely. Show all work.

A)  $x^2 + 13x + 40$

B)  $3x^2 + 17x + 10$

C)  $9x^2 - 30x + 36$

D)  $2x^2 - 6x$

E)  $49x^2 - 25$

F)  $x^2 - 6x + 9$

G)  $-5x^2 + 35x - 60$

H)  $-2x^2 - 7x + 15$

I)  $x^4 - 81x^2$

2. **SOLVE** each **by FACTORING**. Leave answers in **simplest fraction form** - **no decimals**. Show all work.

A)  $2x^2 - x = 3$

B)  $6x^2 + 4x = 0$

C)  $16x^2 + 40x + 25 = 0$

3. Solve each **using the QUADRATIC FORMULA**. Leave answers in **simplest radical form** (no rounding and no decimals). Show all work.

A)  $12x + 9x^2 = 5$

B)  $3x^2 = 2(2x + 1)$

C)  $6x - 5 = -x^2$

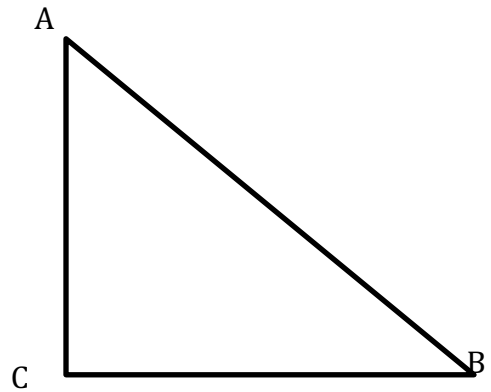
4. Given the diagram below, find the value of  $x$  if:

$$m\angle A = 2x^2 + 31$$

$$m\angle B = 5x + 7$$

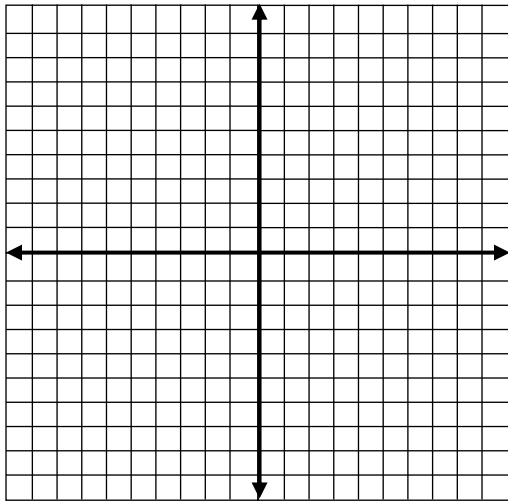
$$m\angle C = 90^\circ$$

Show all work.

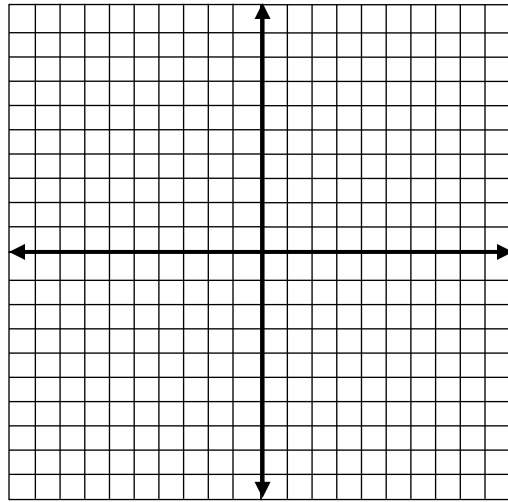


5. Graph each of the quadratic functions given in vertex form. You must have **at least 5 points** for each. Graphs should fill all available space. **Label coordinates for all points.**

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

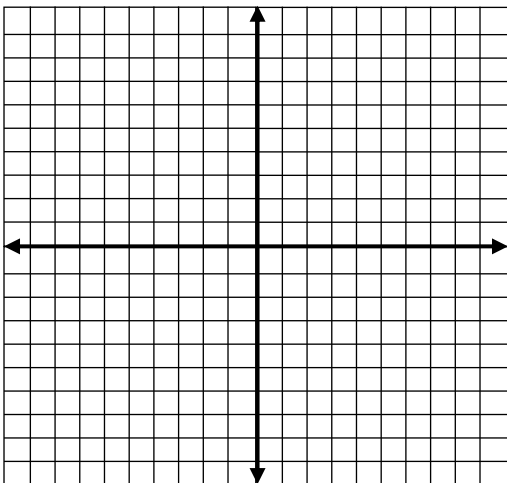


B)  $f(x) = -2(x + 1)^2 + 8$

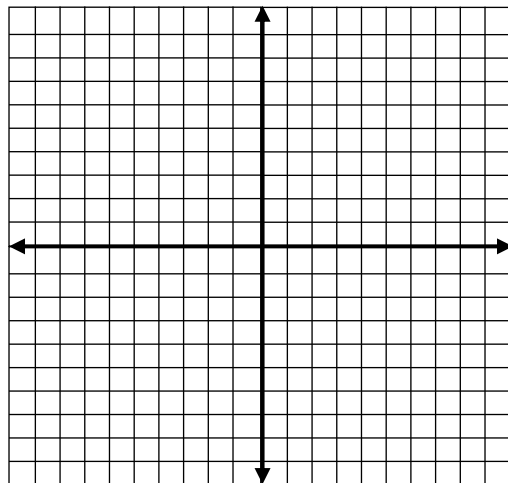


6. Graph each of the following. Identify to which family of functions it belongs. List the domain and range **in interval notation**. Graphs should fill all available space. **Label coordinates for all points.**

C)  $y = 2|x - 3| + 5$



D)  $y = 2^x$



Family:

Domain:

Range:

Family:

Domain:

Range:

7. SIMPLIFY each of the following algebraic expressions. Leave answers **in standard form**. **State any restrictions on the variable.**

A)  $(2x^3 - 3x + 12) + (3x + 12)$

B)  $(2x^3 + 5x^2 + 2x + 12) - (4x^2 - 2x + 12)$

C)  $x(3x^2 + 12)$

D)  $(2x - 3)(3x + 4)$

E)  $(3x - 2)^2$

F)  $\frac{x^2 - 8x - 9}{x - 9}$

G)  $\frac{x^2 - 49}{7 - x}$

H)  $\frac{x^2 - 2x - 3}{x^2 - x - 6}$