Name: _____

DYNAMICS of Algebra II
Summer Preparation Packet 2026-2027

Answer each of the following thoroughly, showing all work. You may collaborate with others and/or use internet sites such as Khan Academy to guide you through problems. The goal is to review the Algebra I concepts you already learned to ensure a strong start in Dynamics of Algebra II.

Complete THE ENTIRE packet. There will be an assessment on this the third day of class.

Simplifying Square Roots

1. Simplify each radical completely, using real numbers. Leave answers in simplest radical form (**no rounding and no decimals**). Do not use a calculator to simplify. **Show all work.**

A) $\sqrt{36}$ B) $\sqrt{300}$ C) $\sqrt{8}$

D) $\sqrt{72}$ E) $\sqrt{12}$ F) $\sqrt{-25}$

Solving Quadratics

2. Solve each using SQUARE ROOTS. Leave answers in simplest radical form (**no rounding and no decimals**). Do not use a calculator to simplify. **Show all work**.

Remember to isolate x^2 before taking the square root of both sides. Don't forget the $\pm$

A) $x^2 = 16$ B) $2x^2 = 40$ C) $-3x^2 + 72 = 0$

Solving Quadratics

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

Quadratic Formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

A) $3x^2 - 4x - 2 = 0$

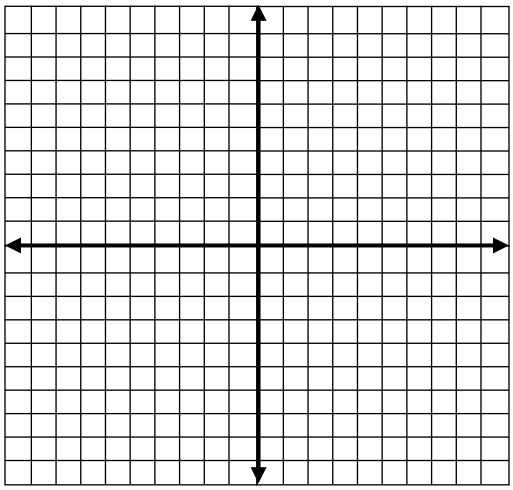
B) $9x^2 + 12x - 5 = 0$

C) $6x - 5 = -x^2$ *(remember - the equation must equal zero first)*

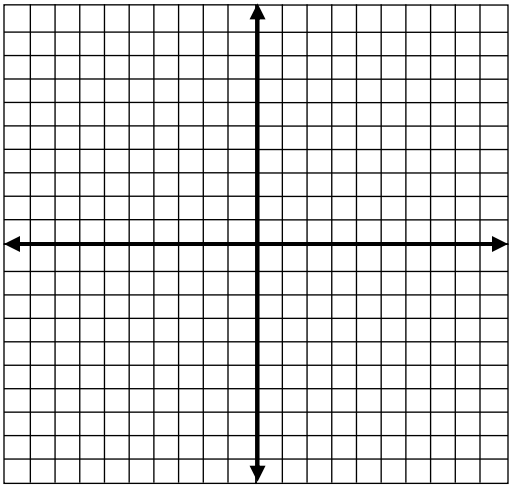
Graphing Linear and Absolute Value Functions

4. Graph each of the following. Graphs should fill all available space. Label coordinates or make a table for all points.

A) $y = -3x + 4$



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



Simplifying Polynomials

5. Perform the indicated operation. Simplify completely. **Write answers in standard form** (no parentheses).

A) $(5x - 12) + (x + 3)$

B) $(-7x + 5) - (-12x - 8)$

C) $3(x - 6)$

D) $2x(3x^2 - 7x + 4)$

E) $(x + 1)(x - 5)$

F) $(x - 9)(x + 9)$

G) $(-4x+6)(-3x+9)$

H) $(7x+2)(-3x+7)$

I) $(x+2)^2$

J) $(4x-7)^2$

Factoring

6. **FACTOR** each of the following completely. These **cannot** be solved.

A) $x^2+14x+40$

B) $x^2-5x-24$

C) x^2-6x+9

D) *Look for a GCF first.*
$-2x^2+6x$

E) *Look for a GCF first. Then Then FACTOR MORE.*
$5x^2-35x+60$

F) *Look for a GCF first. Then FACTOR MORE.*
$2x^2-4x-48$

G) $x^2-24x+144$

H) *Difference of Squares*
$49x^2-25$

I) *Look for a GCF first. Then factor difference of squares.*
$3x^2-48$