Montgomery Blair High School

Honors Alaebra 2

Summer Review Packet

Name: _____

This assignment should serve as a review of the Algebra skills necessary for success in Algebra 2. Our hope is that this review will keep your mind mathematically active during the summer, identify weaknesses in Algebra, if they exist, and prepare you for the fun and challenging year ahead.

All work should be completed and ready to turn in on the first day of school.

Enjoy your summer. We are looking forward to meeting you and working with you in the fall.

Honors Algebra 2 Summer Review Assignment **Name** _____

Answer all questions on separate paper. SHOW ALL WORK.

I. Solve the following systems of equations

1) $5x + 4y = 6$
$-2x - 3y = -1$

2) $-2x + y = 8$
$y = -3x - 2$

3) $-x + 2y = 11$
$3x - 2y = -13$

4) $3x - 2y = 5$
$-6x + 4y = 7$

II. Solve the following linear equations:

1) $-4(3 - x) = 2(x + 6)$

2) $2(3x + 6) + 8 = 6x$

3) $3(4 - x) = 12 - 3x$

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

5) $3(x + 2) + 1 = 2x + 7 + x$

III. Factor each of the following polynomials:

1) $x^2 - x - 72$

2) $7x^3 - 4x^2 + 8x$

3) $a^2 + 20a + 64$

4) $10m^3n^2 - 15m^2n + 25m$

5) $2x^2y - 4xy - 30y$

6) $x^2 - 64$

7) $2x^2 + 9x - 5$

8) $x^2 + 12x + 36$

III. Solve the following quadratic equations:

1) $r^2 + 10r - 9 = 0$

2) $p^2 + 6p = 0$

3) $x^2 - 3x = 10$

4) $5m^2 = 7m$

5) $(2c + 1)(c + 3) = 0$

6) $y^2 = 4y + 32$

7) $2x^2 - 3x - 2 = 0$

8) $z^2 = 16$

9) $d^2 + 5d - 1 = 0$

V. Write the equation of the following lines

1) through $(0, -1)$, $m = -1$

2) through $(-2, 3)$, $m = \frac{4}{3}$

3) through $(3, -1)$, $m = 0$

4) vertical, through $(5, 4)$

5) through $(2, 3)$ and $(7, -2)$

6) through $(3, 4)$ and $(-2, 4)$

VI. Graph: state <u>domain</u> and <u>range</u> for each graph (use interval notation)

1) $y = -\frac{3}{4}x + 4$

2) $y = 3x + 2$

3) $y = (x - 2)^2 + 1$

4) $y = x^2 + 6x + 1$

5) $2x + 3y = 12$

6) $y = |x|$

7) $y = |x + 2|$

8) $y = |x| + 3$

9) $y \geq 2x + 1$

10) $y < -3x + 4$

11) $y \leq 4$

12) $x > -2$

13) $y = 5$

14) $x = -2$

VII. Simplify each of the following:

1) $(-3x^2 + 4x - 7) + (2x^2 - 7x + 8)$

2) $\dfrac{64x^3y^2 - 16x^2y^3 + 32x^5y^5}{8x^2y^2}$

3) $(39a^4 - 4a^3 + 2a^2 - a - 7) - (10a^4 + 3a^3 - 2a^2 - a + 8)$

4) $2x^2z(3x - 2z)$

5) $-3xy^3(x - 2y)$

6) $(3x^2 + x - 1)(2x - 3)$

7) $\dfrac{10a^3b^2c^7}{5a^5bc^7}$

8) $(8a^3b^2)(2a^{-4}b^{-5})$

9) $(-3x^2y^3z)^3$

10) $(15a^4b^2c)^0$

11) $\dfrac{3x^3y^2}{6x^{-2}y^5}$

12) $(3x + 7)(2x - 5)$

13) $(x + 6)^2$

VIII. Simplify each of the following using <u>exact</u> answers - no decimals! (For example: $\sqrt{8} = 2\sqrt{2}$)

1) $\sqrt{32}$

2) $\sqrt{\dfrac{3}{5}}$

3) $\sqrt{\dfrac{3}{2}}$

4) $\sqrt{48xy^5}$

5) $\sqrt{8} + \sqrt{18} - \sqrt{32}$

6) $\sqrt{21} \cdot \sqrt{14}$

7) $\sqrt{16a^3b^2}$

IX. Solve each of the following equations:

1) $\sqrt{2a} = 8$

2) $\sqrt{3x - 5} = \sqrt{2x + 4}$

3) $2 - \sqrt{x} = 4$

4) $\sqrt{3x} - 4 = 2$

X. Given the following matrices, complete the given problems:

$$A = \begin{bmatrix} 2 & 5 & -1 \\ 3 & -2 & 0 \end{bmatrix} \qquad B = \begin{bmatrix} 5 & -3 \\ 0 & 2 \\ -1 & 4 \end{bmatrix} \qquad C = \begin{bmatrix} -1 & 3 & 0 \\ 5 & 2 & -3 \end{bmatrix}$$

1) $A + C$

2) $2B$

3) $C - A$

4) $A + B$

5) order of $[A]$

6) order of $[B]$

7) order of $[C]$