Montgomery Blair High School

Algebra 2 Summer Review Packet

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.

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

II. **Solve** the following **linear** equations:

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

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

III. **Factor** each of the following polynomials:

1) $x^2 - x - 72$

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

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

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

5) $x^2 - 64$

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

IV. **Solve** the following quadratic equations:

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

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

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

4) $x^2 = 16$

V. **Solve** each of the following:

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

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

VI. **Solve** each of the following

1) Find the area of a rectangle with $l = 2x + 3$ and $w = x - 2$
2) Find the area of a square with $s = 2x + 5$
3) The area of a square with side $2x - 1$ is 49. Find x
4) A baseball diamond is a square 90 feet on each side. How far is it from 1st to 3rd base?
5) Find the diagonal of a rectangle with $l = 40$ and $w = 55$.
6) An isosceles right triangle has leg = 4 cm. What is the length of the hypotenuse?

VII. Simplify each of the following:

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

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

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

4) $-3xy^3 (x - 2y)$

5) $(3x^2 + x - 1)(2x - 3)$

6) $(8a^3b^2)(2a^{-4} b^{-5})$

7) $(-3x^2y^3z)^3$

8) $(15a^4b^2c)^0$

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

10) $(x + 6)^2$

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

VIII. Simplify each of the following using exact answers – no decimals. Leave your answer in **radical form** (no decimals).

1) $\sqrt{32}$

2) $\sqrt{\frac{9}{4}}$

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

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

5) $\sqrt{21} \bullet \sqrt{14}$

IX. Graph each of the following on graph paper or create a grid..

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) $y = |x|$

X. Define the following function **properties.**

1) Domain
2) Range
3) Increasing
4) Decreasing
5) Minimum
6) Maximum
7) x-intercepts/zeros
8) y-intercepts
9) Continuity

XI. Given the following **matrices**, complete the given problems:

$$A = \begin{bmatrix} 6 & -3 \\ 2 & 1 \end{bmatrix} \qquad B = \begin{bmatrix} 5 & 6 \\ 2 & -1 \end{bmatrix} \qquad C = \begin{bmatrix} 0 & 5 \end{bmatrix}$$

1) A + B=

2) A – B

3) –2C