Summer Work Packet for MPH Math Classes

Students going into College Algebra

Sept. 2017

Name: _____

This packet is designed to help students stay current with their math skills.

Each math class expects a certain level of number sense, algebra sense and graph sense in order to be successful in the course.

These problems need to be completed in the space provided, or a separate sheet of paper, by the first day of class. Be sure to show all work.

Students can expect this packet to be graded, and/or to have a test on this material during the first marking period.

If you have any questions please email Ms. Guerra at dguerra@mphschool.org or Mrs. Meehan at dmeehan@mphschool.org.

You will need a TI-84 or TI-84$^+$ calculator for this class.

These are skills you will need in order to be successful in learning college algebra. **Show all work**! Do **NOT round** any answers. Write the answers as a **fraction** if the **decimal is repeating** or the **calculator does not show the whole decimal**.

Show all work on the packet for credit.

I. Solve the following equations using strategies that you have learned in your math classes and check your answers where noted.

Linear: **Check:**

$-3(4x + 6) + 10 = 5x - 3(\ \frac{1}{2}\ x - 5)$

$\frac{6}{7}x - \frac{2}{3} = -5(\frac{1}{3} + 2x)$

Quadratic:

$x^2 + 3x - 10 = 0$

$x^2 + 13x + 40 = 0$

$7x^2 + 33x - 10 = 0$

$2x^2 - 11x - 21 = 0$

$-4m^2 - 4m + 5 = 0$

$2p^2 + 5p - 4 = 0$
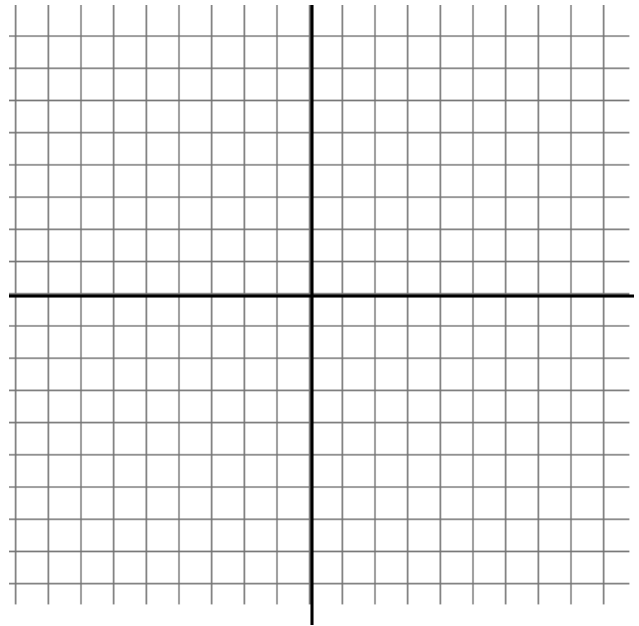
Cubic:

$3x^3 + 7x^2 - 12x = 28$

Quartic:

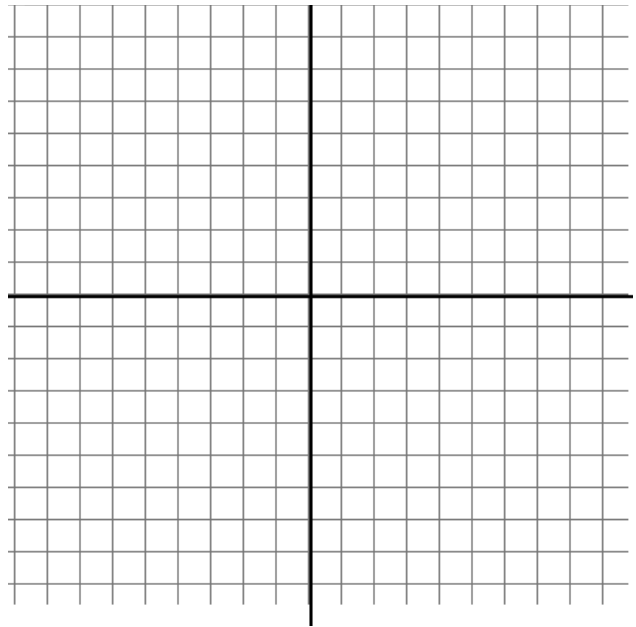$9x^4 - 12x^2 + 4 = 0$

Radical:

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

Check:

II. If (6, 3) and (1, −2) are on a line, **find the equation of the line** using the point/slope formula, $m(x - x_1) = y - y_1$. Then graph the line with the x and y intercepts plus one other point.
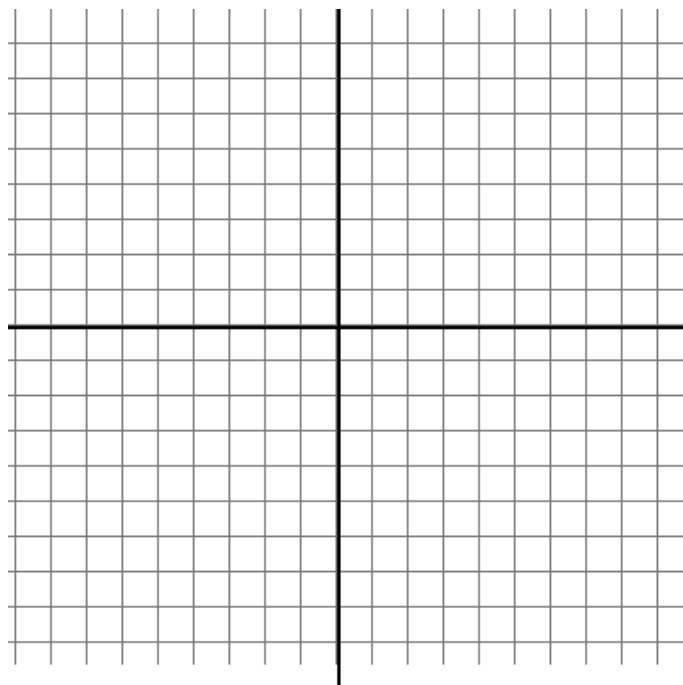
III. **Graph the following quadratic functions (using a table of values) and label the vertex, x and y intercepts and two other points:**

A. $y = x^2 - 2x - 8$

B. $y = -\frac{1}{2}x^2 + 4x - 1$

IV. **Solving Systems of Linear Equations: Solve algebraically using the substitution method or combination (elimination) method. Check your answer.**

$x + 3y = 8$
$x - 5y = 8$

V. **Use the properties of exponents to write the following expression in simplest form with no negative exponents.**

$(16)^{-\frac{3}{4}}$

$125^{\frac{2}{3}}$

$(3^{\frac{1}{3}} \cdot 4^{\frac{1}{3}})^{-3}$

$(3^5)^{-\frac{1}{2}} \cdot (4^{-6})^{\frac{1}{3}}$

$\sqrt[3]{-8x^6 y^9 z}$

$\left(\dfrac{27x^7 y}{8xy^{13}} \right)^{\frac{-2}{3}}$

VI. Adding, Subtracting, Multiplying and Dividing Polynomials:

Let:
$$f(x) = 4x^2 - 3x + 1$$
$$g(x) = 3x^2 - 6$$
$$h(x) = x - 2$$

a. Find: f(x) + g(x)

b. Find: f(x) – g(x)

c. Find: 2f(x)

d. Find: $\frac{1}{3}$ g(x)

e. Find: f(3) – g(2)

f. Find: f(–1) + g(–4)

g. (h(x))²

h. f(x)/h(x)

VII. Perform the indicated operations. (Hint, always factor your expressions when applicable).

$$\frac{x}{x-3} - \frac{8}{x^2+2x-15}$$

$$\frac{\dfrac{4}{x+1}+\dfrac{1}{x-1}}{\dfrac{16}{x-1}+\dfrac{7}{x+1}}$$

$$\frac{x^2+4x+3}{4x^2+12x} \cdot \frac{6x^2+5x}{x+1}$$

VIII. Solve the following equations for the variable. Check your answers.

$$\frac{3}{2x+6} = \frac{1}{x^2-5}$$ Check:

$$\frac{1}{a+2} + \frac{1}{a} = \frac{5}{a}$$ Check: