Summer Work Packet for MPH Math Classes

Students going into
College Algebra
Sept. 2020

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 should be completed in the space provided. Show all work.

If you have any questions, email Mr. Ochs at jochs@mphschool.org

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

Show all work.

I. Rational Expressions. Leave no negative exponents.

a. Simplify $\dfrac{(5ab^2)^2 c^{-4}}{10a^2(bc)^4}$

d. Simplify $(2x^2 y^{-1})^{-4} \cdot 20x^0$

b. Simplify $\dfrac{x^4 y^5}{8xy} \cdot \left(\dfrac{4}{xy^2}\right)^3$

e. Combine $\dfrac{5}{6x} + \dfrac{3}{4y}$ as one fraction.

c. Simplify $(2x^2 y)^3 \cdot (-3xy)^2$

f. Combine $\dfrac{x}{x+2} - \dfrac{1}{x-4}$ as one fraction

II.   Simplifying Radicals

a. Simplify $5\sqrt{98} - 4\sqrt{45} - 8\sqrt{200}$

b. Simplify $2xy\sqrt{20x^4y^5z^2}$ where $x, y, z > 0$

c. Rationalize and simplify $\dfrac{2xy}{\sqrt{10xy}}$

d. Solve for x given $4x^2 + 11 = 20$

III.   Factoring. Factor the following completely.

a. $-x^2 + 3x + 18$

c. $3x^2 - 8x + 4$

b. $x^4 - 625y^4$

d. $2xy + 8y^2 + 11abx + 44aby$

e. Factor the expression and cancel to simplify: $\dfrac{(y^2-64)(y^3-10y^2-24y)}{y(y^2+10y+16)(y^2-y-56)}$

IV. Solving quadratic equations.

a. Solve for x given $15x^3 = 27x^2 + 6x$

b. Solve for x given $11x^2 = 22x$

c. Solve for x given $2x^2 + 9 = 10x$

V. Systems of Equations

a. Solve the system of equations using the substitution or elimination method.

$$5x - 2y = 10$$
$$-4x + 8y = 24$$

b. Brenda's Marketplace sells Creamed Corn Yogurt for $5.75 and Pork Loaf in Fish Sauce for $7.50. Last week, the marketplace sold a total of 33 cans combined to the Bingo Parlor for $221.25. How many cans of each product were sold?
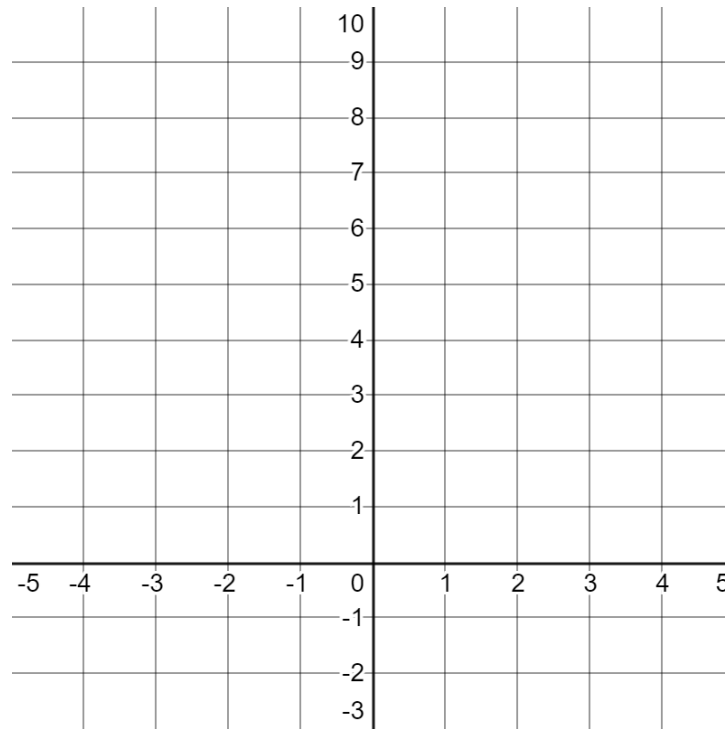
VI.   Graphing and function notation.

a. Given $g(x) = 2x - 10$, find $g(2a - 1)$ and give the answer as a coordinate.

b. Given $f(x) = x - 2$ and $g(x) = x^2 - x - 20$. Find $g(f(x))$ in standard form.

c. Find an equation of a line in point-slope form that passes through the points $(6, 3)$ and $(2, -7)$.

d. Graph $f(x) = x^2$ and $g(x) = (x - 1)^2 - 2$ on the same graph using your calculator and the table function.

e. How did $y = x^2$ become $y = (x - 1)^2 - 2$ from part d. Look at the movement of the vertex.

Calculator Use

a. Using your calculator, find the x-intercepts of $f(x) = x^2 - 5x - 7$ to the nearest hundredth.

b. Using your calculator, solve for x given $\frac{\pi}{2}x + \frac{47}{11} = 3.227(2x + \frac{13}{14}) - 2.75x$. Round to nearest thousandth.
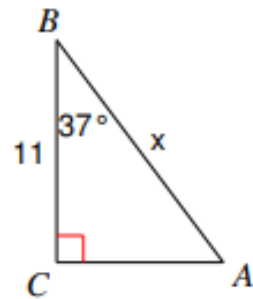
c. Using your table function on your calculator graph $y = \sqrt{x + 5}$
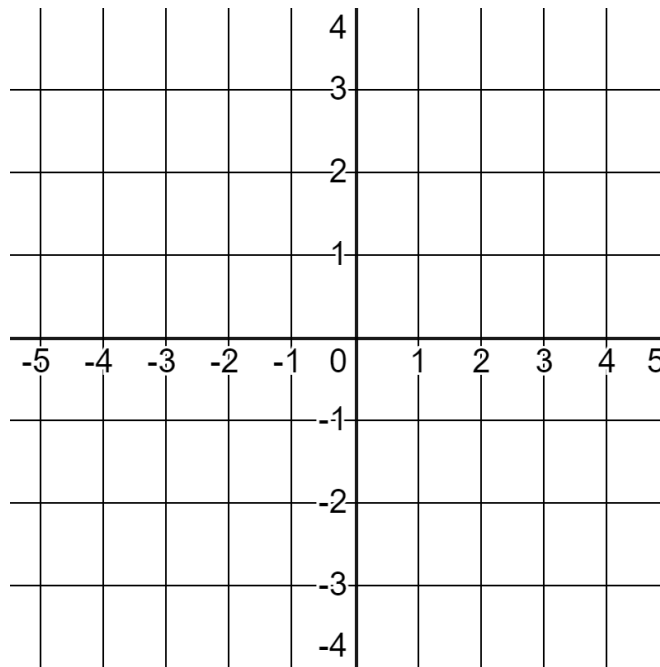
VIII.   Trigonometry

a. Convert 135 degrees to radians

b. Find the value of x to the nearest tenth given the triangle below.

B

$37°$

11 x

C A

c. Find the measure of a given angle shown below.

17

$a + 5$

15