NAME_____

This packet must be completed in its entirety over the summer to be best prepared for your precalculus course.

DIRECTIONS/INFORMATION:

- This packet contains review problems from your most recent math class and represents the types of mathematics knowledge your teacher expects you to have before entering the next math course.

- The packet is divided into eight one-week sections that will allow you to develop a schedule for completing the entire packet. Follow the directions given in each section of the packet carefully.

Thank you in advance for completing this packet by the first day of school. We look forward to working with you in September.

Mr. Olster

Week 1 Assignment – Linear Equations

Write the slope-intercept form of the equation of each line.

1) $5x - 6y = -15$ 1) _____

2) $12x + 8y = -48$ 2) _____

Write the slope-intercept form of the equation of each line.

3) Through: (3, -2), slope = 7 3) _____

4) Through: (-6, 3), slope = $\frac{5}{3}$ 4) _____

Write the point-slope form of the equation of the line described.

5) Through: (-4, 2), parallel to $y = -\frac{5}{2}x + 5$ 5) _____

Write the point-slope form of the equation of the line described.

6) Through: (-4, -1), perpendicular to $y = -2x + 3$ 6) _____

Solve the system of equations.

7) $\begin{aligned} -x - 7y &= 14 \\ -4x - 14y &= 28 \end{aligned}$ 7) _____

8) $\begin{aligned} 3x - 2y &= 2 \\ 5x - 5y &= 10 \end{aligned}$ 8) _____

Suggested Resources: If you are having trouble with any of these problems, you may find the link below helpful.

https://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities

Week 2 Assignment – Linear Inequalities

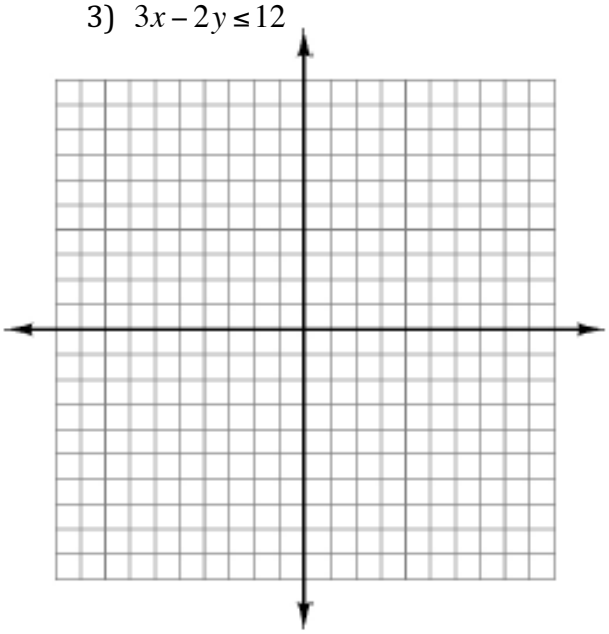
Solve each compound inequality and graph the solution on the number line to the right.

1) $x+3 \geq 11$ *or* $x-3 \leq -5$

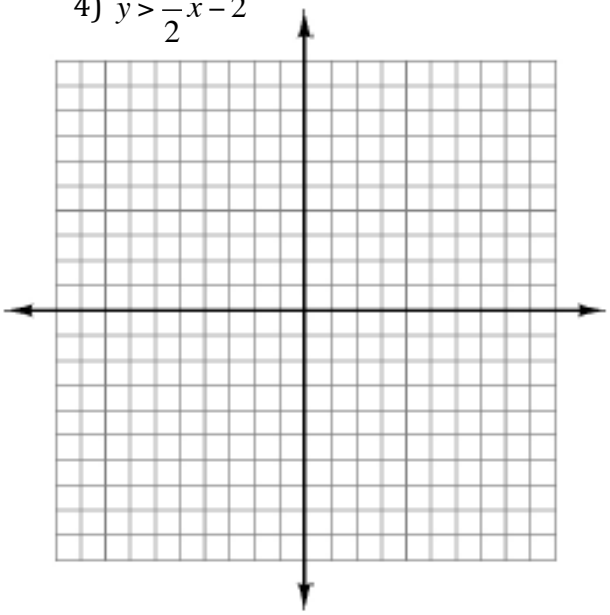
2) $-7 \leq -2x+5 \leq 1$

Graph the linear inequality on a coordinate plane.

3) $3x - 2y \leq 12$



4) $y > \frac{3}{2}x - 2$



Suggested Resources: If you are having trouble with any of these problems, you may find the link below helpful.

https://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities

Week 3 Assignment – Factoring Methods

Factor Completely.

1) $18y^3 + 24y^2 - 12y$ 1) _____

2) $3x^2 + 7x + 4$ 2) _____

3) $3x^2 + 7x + 4$ 3)_____

4) $t^4 - 22t^2 + 40$ 4) _____

5) $6x^2 + 48$ 5) _____

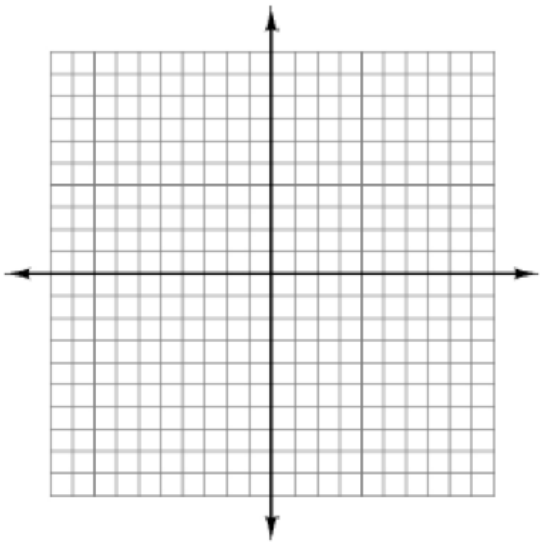
Suggested Resources: If you are having trouble with any of these problems, you may find the links below helpful.

https://www.khanacademy.org/search?page_search_query=factoring

http://patrickjmt.com/factoring-sums-and-differences-of-cubes-ex-3/

Week 4 Assignment – Quadratic and Higher Degree Polynomials

1. Sketch a complete graph of $y = x^2 – 3x - 4$.
   Include: x & y intercepts, vertex, and axis of symmetry.



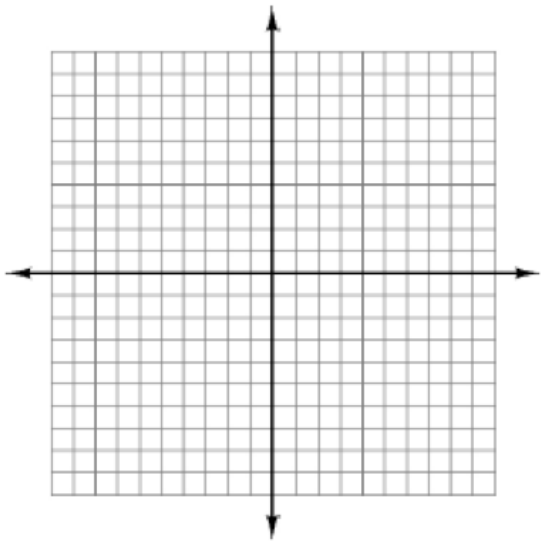
x-intercepts: _____

y-intercepts: _____

vertex: _____

axis of symmetry: _____

2. Sketch a complete graph of $y = x^2 – 6x + 8$.
   Include: x & y intercepts, vertex, and axis of symmetry.



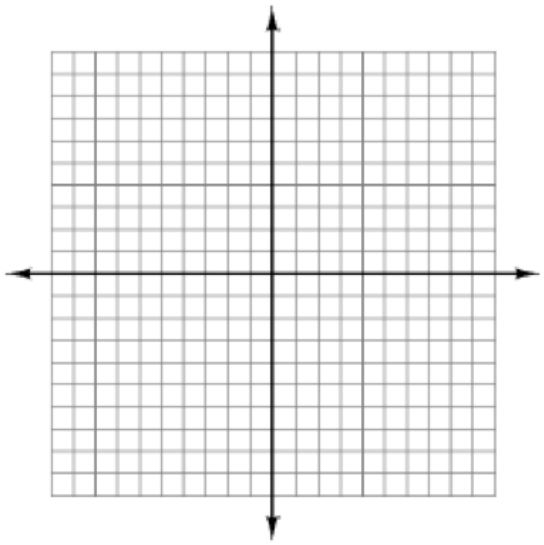
x-intercepts: _____

y-intercepts: _____

vertex: _____

axis of symmetry: _____

3. Sketch a complete graph of $y = x^2 - 6x + 9$.
   Include: x & y intercepts, vertex, and axis of symmetry.



x-intercepts: _____

y-intercepts: _____

vertex: _____

axis of symmetry: _____

4. Solve each of the equations for x:

a. $x^2 - 1x = 110$

b. $3x^2 - 8x + 5 = 0$

c. $x^2 + x - 1 = 0$

d. $x^2 + 2x + 12 = 2$

5. Determine a quadratic equation that has 7 and -4 as roots 5. _____

Suggested Resources: If you are having trouble with any of these problems, you may find the links below helpful.

http://patrickjmt.com/?s=synthetic+division

https://www.khanacademy.org/math/algebra/quadratics/graphing_quadratics/v/graphing-a-quadratic-function

Week 5 Assignment – Exponent rules, exponentials and logarithms

1. Simplify, using no negative exponents: $\left(\frac{2}{xy^3z^2}\right)^{-1}$

2. Simplify, using no negative exponents: $(2xy^{-3})^0$

3. Simplify, using no negative exponents: $\left(\frac{2x^4y^{-3}z}{5x^{-2}y^5z^2}\right)^3$

4. Simplify, use no negative exponents: $(3x^{-4}y^{-3})(4x^3y^9z)$

5. Simplify, using no negative exponents: $\left(\frac{x^5y^{-2}}{3x^{-2}y^5}\right)^{-2}$

6. Solve for x:

a. $5^{4-2x} = 25$

c. $3^x + 7 = 29$

b. $4^x = 35$

d. $2^{x-4} = 72$

7. Rewrite in exponential form and solve:

a. $\log_4 x = 2$

b. $\log_3 9 = x$

c. $\log_b 125 = 3$

8. Rewrite in logarithmic form

a. $b^c = y$

b. $12^x = 11$

c. $9 = 4^y$

Suggested Resources: If you are having trouble with any of these problems, you may find the links below helpful.

https://www.khanacademy.org/math/algebra/exponent-equations/exponent-properties-algebra/v/simplifying-expressions-with-exponents

https://www.khanacademy.org/math/trigonometry/exponential_and_logarithmic_func

Week 6 Assignment – Radical expressions and equations

Rewrite in simplest radical form:

1. $\sqrt{3x-2}=8$

1. _____

Solve for x:

2. $\sqrt{\frac{2x}{5}}=\sqrt{3x-58}$

3. $\sqrt{x-1}=x-7$

4. Simplify:

a. $\sqrt{24}$ b. $\sqrt{50}$ c. $\sqrt{80}$

Suggested Resources: If you are having trouble with any of these problems, you may find the links below helpful.

https://www.khanacademy.org/math/algebra/exponent-equations/radical_equations/v/solving-radical-equations

Week 7 Assignment – Rational expressions and equations

1. Multiply or divide and simplify as much as possible:

   a. $\frac{m^2-49}{8m} \cdot \frac{3m}{m+7}$

   b. $\frac{s^2+5s}{s^2-s-12} \div \frac{s+5}{s-4}$

2. Add or subtract and simplify as much as possible:

   a. $\frac{3}{x} + \frac{7}{y}$

   c. $\frac{x^2-5x-6}{x^2+10x+9} - \frac{1}{x+9}$

   b. $\frac{x^2-5x-6}{(x+5)(x-2)} + \frac{4x+12}{(x+5)(x-2)}$

   d. $\frac{7}{3x^2-6x} + \frac{x^2}{x^2-4x+4}$

3. Solve:

   a. $\frac{2}{2z} - \frac{3}{4z} = 0$

   b. $1 + \frac{5}{x} + \frac{4}{3x} = 11$

Suggested Resources: If you are having trouble with any of these problems, you may find the links below helpful.

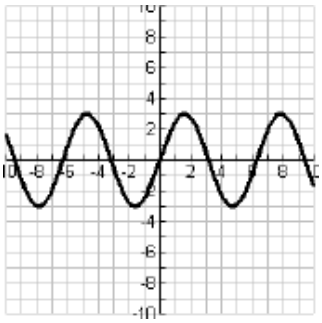
https://www.khanacademy.org/math/algebra/rational-expressions/rational_expressions/v/adding-and-subtracting-rational-expressions

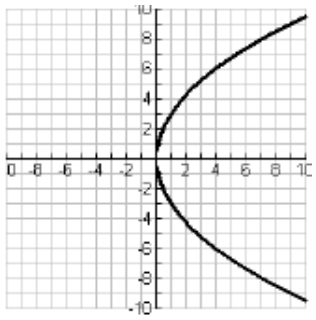
Mesivta Summer Math Packet
Incoming PreCalculus Students

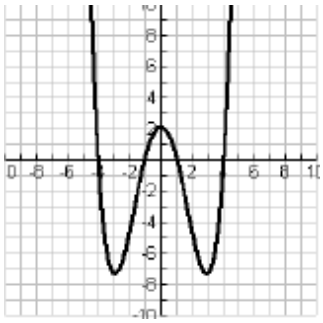
Week 8 Assignment – Functions, domain & range

1. State the definition of a function.

2. Determine whether each of the following are functions:

a. 

b. 

c. 

3. Find the domain: {(0, -2) , (4, -9), (18, -12)}

4. Find $g(0),\ g(1),\ and\ g(-3)\ for\ g(x) = -x^2 - 6x + 2$

5. Find the domain and range of the functions below:

   a. $f(x) = x^2 - 9$

   b. $g(x) = \sqrt{x - 4}$

6. If $f(x) = 2x^2 + 5x + 3$, evaluate the following:

   a. $f(-2)$

   b. $f(0.5)$

   c. The values of x that make f(x) = 0

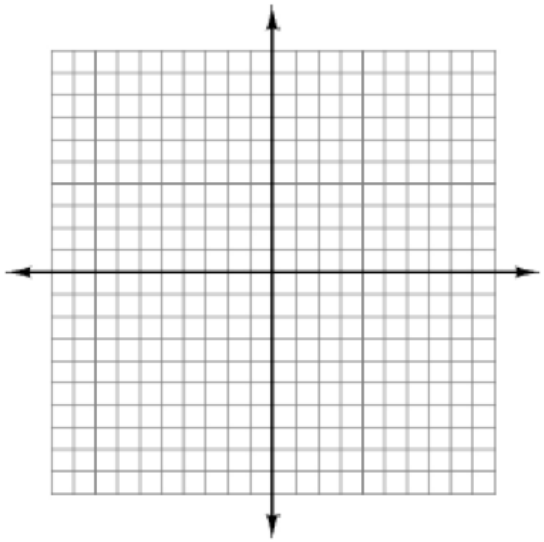
7. Find the inverse of the following functions:

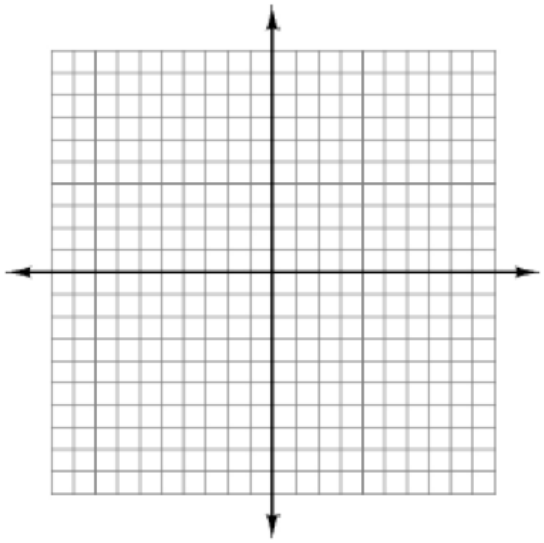
   a. $f(x) = x^3 + 4$

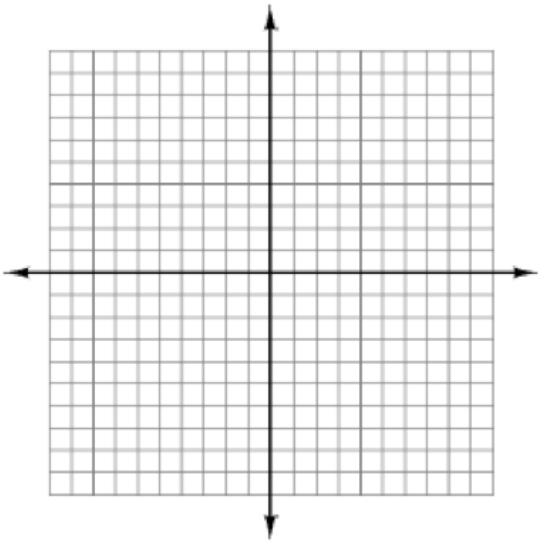
   b. $g(x) = 3x - 6$

Sketch a graph of each function

8. $f(x) = (x+1)^2 - 5$
9. $f(x) = |x - 4| + 2$
10. $f(x) = \sqrt{x-2} + 3$







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https://www.khanacademy.org/math/trigonometry/functions_and_graphs/analyzing_functions/v/graphs-of-square-root-functions

http://patrickjmt.com/?s=domain+and+range