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| C:\Users\cps-student\Desktop\IMG_6016.PNG | \*Solve intricate equations by graphing each side using a graphing calculator, and determining the x-value(s) at the point(s) of intersection.  \*When checking the number of solutions to a system of non-linear functions, sketch a graph of each using the transformation rules (up/down, left/right, reflect, etc.)  \*Axis of Symmetry: always x = the x-coordinate of the vertex (easy to determine if given in transformation form; use x = -b/2a if given in standard form)  \*To find a third and second point to graph a quadratic, use an x-value close to the vertex, determine the y-value, and then reflect that point over the axis of symmetry, OR use the slope of the function. |
| \*Be careful to double check all of your signs! | \*When both variables cancel out in a system, you will either have a true statement (all real numbers/infinite solutions) OR a false statement (no solutions/parallel lines) |
| \*Always look for a GCF first when factoring  \*If you have four terms, form two groups and factor by grouping.  \*If you have two terms, see if they are a difference of squares.  \*Use the sites below for a reference on the AC method for factoring!  <http://www.bates.ctc.edu/Documents/Tutoring%20Center/Tutoring_ACmethodwksheet.pdf>  <https://www.youtube.com/watch?v=RoeNm4LF9YQ> | \*A function is a relation in which each input maps to exactly one output.  \*f(x) = y  \*f(input) = output  [parentheses do not mean multiplication here!]  \*2f(4) means two times “f of 4” OR 2 times the y-value of the function when x is 4  \* (f ○ g)(x) means “f of g of x,” which means to first evaluate g(x), and then input this for x in f(x).  \*(f•g)(x) means f(x) times g(x) |
| \*Domain is all inputs, or x-values; Range is all outputs, or y-values  \* ( ) are used for open circles or infinity; [ ] are used for closed points; { } are used for sets of discontinuous points  \*Even symmetry: symmetric about y-axis; f(x) = f(-x)  \*Odd symmetry: symmetric about the origin; f(-x) = -f(x) | \* Af(Bx + C) + D  A: if negative, reflects over x-axis  |A| > 1, slope is steeper, so graph becomes more narrow  |A| < 1, slope is flatter, so graph widens  B: if negative, reflects over the y-axis  C: positive moves left and negative moves right  D: positive moves up and negative moves down |
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| \*Other names for “solutions,” are: roots, zeros, x-intercepts  \*A function that has “no real roots” will never cross the x-axis | \*Solve systems of linear functions using the elimination or substitution methods |
| \*Always remember to test a point when shading a graph of an inequality | \*A solution to a system should satisfy all equations in the system. |
| \*The solution to a system occurs at the point of intersection of the graphs in the system. | \*Rewrite powers of *i* in terms of *i* squared, remembering that *i squared is -1*  \* *i represents the square root of -1* |
| \*After distributing, get rid of the parentheses, and combine like terms if possible. | \*You can solve quadratic equations by factoring, taking square roots, or the quadratic formula. |
| \*The y-intercept is the point when the value of x is zero  (crosses y-axis).  \*The x-intercept(s) is/are the point(s) when the value of y is zero (crosses x-axis).  \*Max/Min of a quadratic occurs at the vertex | \*Multiply by the conjugate in the numerator and denominator to simplify fractions with imaginary numbers.  \*The conjugate of 3*i* is -3*i.*  \*The conjugate of 2 + 5*i* is 2 – 5*i*.  \*Standard form for complex numbers:  Real + imaginary |