

PreCalculus Honors Summer Assignment – Kimball High School HINTS PAGE. It is VERY IMPORTANT to read this page before starting any work on the Summer Assignment.

First, email Mr. Medek (dmedek@tUSD.net) and put PreCalculus 2018 in the subject line.

The summer assignment includes many concepts that should be review to you. They are covered in detail in Chapter P, so use the PreCalculus website to access the pdf version of the old text. The Summer Assignment is the review at the end of Chapter P. Most of these concepts are covered in detail on common Algebra Help websites. Two you should try first are:

- www.purplemath.com This site is like an online textbook. You will need to click on the "[How do you really do this stuff?](#)" This will lead you to a list of topics. If you can't find what you need in the list of topics, type a few key words in the search box.
- www.khanacademy.org If you like this, input my email address as a coach. Make your identity one I can recognize easily. My email address is dmedek@tUSD.net

You can also find lessons both at www.youtube.com and on iTunes U, which is a free feature of iTunes.

If none of those sites are helpful, there are hints for specific problems below. Some of the things you will be asked to do refer to a "graphing utility," (for example, problems 30 through 37). You have three choices:

- Use a graphing calculator. If you already have one, it is time to put it to use. If you don't, now would be a good time to purchase one so that you can get used to it. Our mathematics department at Kimball High recommends Texas Instrument calculators because they are easy to use and very sturdy. The Ti-84 Plus Silver Edition is a very good calculator that should serve your purposes all the way through college. http://education.ti.com/educationportal/sites/US/nonProductSingle/graphing_course_comparison.html
- Download and use a free online program. There are several available. A very useful one is Graph: www.padowan.dk. I highly recommend you create an account with www.Desmos.com as well.
- Use a program on the computer. Some Apple computers come with the program "Graphing Calculator" already installed. It can also be purchased in Windows or Mac format from www.pacificct.com. Student versions cost as little as \$20. Calculus students find the advanced capabilities of this program helpful.

Finally, below are problem-specific hints. If you are still confused, write to Mr. Medek at dmedek@tUSD.net

#1-4: Use graph paper. You can put all four points on one grid, but label each point. Label the axes, including scales (regular intervals marked clearly).

#7: Make a separate graph for this problem.

#8: You have two separate graphs for this problem.

#11 and 12: What is required of a polygon in order for it to be a right triangle? How can I tell if the angles are 90 degrees? Think about slope and/or the Pythagorean Theorem. What must be true about the opposite sides of a parallelogram?

#16 and 17: <http://www.cleanvideosearch.com/media/action/yt/watch?v=k5Z3qb052Ek> See problems 1 and 4.

#20-29: Use the same method as in #18 and 19 to plot points. Show these calculations on your paper. Be sure to include both negative and positive values for x.

#28, you may want to start with y-values first, including both positive and negative values for y.

#29: See the hint for #16 and 17. You may want to use a compass.

#30 through 37: see the hints above about using a graphing utility. You do not need to draw anything on these assignments, but you may make a quick sketch, if you like.

(note, there are no questions 38, 105, 106, 129-134 or 138 on this assignment)

#39 through 44: use the formula for finding slope.

#45 through 48: first, find the slope between the two points that you already know. For question number 45, that would be between $(-2,5)$, $(1,1)$ which is $-4/3$. Now calculate the slope between $(0,t)$, $(1,1)$ and simplify. Finally,

write a proportion and solve for t: $\frac{-4}{3} = \frac{t-1}{-1}$.

#49 through 58: Although the instructions don't specify as to the form of the final equation, **please write them in Standard Form**, which looks like this: $Ax + By = C$, where A, B and C are integers (no fractions or decimals). Use this to write the equation: <http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/equation-of-a-line/v/linear-equations-in-standard-form> OR <http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/equation-of-a-line/v/point-slope-and-standard-form>

#59 through 64: <http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/more-analytic-geometry/v/algebra--equation-of-a-line> OR <http://www.purplemath.com/modules/strtlneq.htm>

#65 and 66: <http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/more-analytic-geometry/v/equations-of-parallel-and-perpendicular-lines> OR <http://www.purplemath.com/modules/strtlneq3.htm>

#67 and 68: Graph the lines and points. You should be able to quickly draw the lines that are parallel and perpendicular. Remember: horizontal lines have equations like $y = (\text{a number})$, while vertical lines have equations like this: $x = (\text{a number})$.

#69 through 72: <http://www.khanacademy.org/math/algebra/rational-expressions/rational-expressions/v/solving-rational-equations-1>
OR <http://www.purplemath.com/modules/solvtrnl.htm>

#73 through 76: <http://www.purplemath.com/modules/intrcept.htm> OR <http://www.khanacademy.org/math/algebra/linear-equations-and-inequalitie/graphing-with-intercepts/v/graphing-using-x-and-y-intercepts>

#77 and 78: Sketch these. On your work, be sure to write, "**x-intercepts are . . .**" and "**y-intercept is . . .**" On the graphing calculator you can find the absolute value function by pushing the MATH key, then go to the menu NUM and it is the "abs(" choice.

#79 through 84: Using the graphing utility of your choice (see suggestions on the first page of this document), look for all of the places where the graph crosses the x-axis. If it doesn't cross, there are no solutions. If it crosses in more than one place, there's more than one solution.

#85 and 86: <http://www.purplemath.com/modules/systlin5.htm> OR http://www.khanacademy.org/math/trigonometry/systems_eq_ineq/systems_tutorial_precalc/v/trolls--tolls--and-systems-of-equations OR <http://www.cleanvideosearch.com/media/action/yt/watch?videoid=nok99JOhcjo>

#87 and 88: <http://www.purplemath.com/modules/syseqgen.htm> OR <http://www.cleanvideosearch.com/media/action/yt/watch?videoid=Qs57vKWFJLQ>

#89 through 98: You must decide which method is most appropriate to solve a Quadratic Equation; factoring, completing the square, or using the quadratic formula.

http://www.khanacademy.org/math/algebra/quadratics/factoring_quadratics/v/Example%201:%20Solving%20a%20quadratic%20equation%20by%20factoring OR <http://www.purplemath.com/modules/solvquad.htm>

#99 through 102: First factor out the GCF. Then look to the hint for 89 and 90. For #100, you will also need to factor the difference of cubes: <http://www.purplemath.com/modules/specfact2.htm>

#103 to 106: <http://www.purplemath.com/modules/solverad2.htm>

#107 and #108: <http://www.youtube.com/watch?v=xyuZbwvm1WM> Remember that $8^{\frac{2}{3}} = \left(\sqrt[3]{8}\right)^2$. So, in order to

solve $x^{\frac{3}{2}} = 8$, raise both sides of the equation to the $\frac{2}{3}$ power: $\left(x^{\frac{3}{2}}\right)^{\frac{2}{3}} = 8^{\frac{2}{3}}$ This simplifies to $x = \left(\sqrt[3]{8}\right)^2$, and

$x = (2)^2$, so $x = 4$. On #107, first add 25 to both sides, then use this property.

#109 through 112: Rewrite so that the equation becomes a proportion.

<http://www.purplemath.com/modules/solvtrnl.htm> OR

<http://www.cleanvideosearch.com/media/action/yt/watch?videoid=uQrMrNDmPBo>

#113 and 114: http://www.anlyzemath.com/Equations/Absolute_Value_Tutorial.html

#117 through 134: When graphing inequalities, we will use the Interval notation system shown at these pages (the one with parentheses and brackets): <http://www.purplemath.com/modules/ineqsolv.htm> OR

<http://www.regentsprep.org/Regents/math/ALGEBRA/AP1/IntervalNot.htm>

#121 through 126: <http://www.cleanvideosearch.com/media/action/yt/watch?videoid=BhFj7Rkyc5E> OR

<http://www.purplemath.com/modules/absineq.htm>

#127 and 128: <http://www.purplemath.com/modules/ineqqquad.htm> OR

<http://www.youtube.com/watch?v=t54ccHYVhoo>

#135: What is the shortest length possible for each side of the square? What is the longest length possible? Compare the areas of these two squares.

#136: Make a list of pairs of numbers that will work for a and b.

#137: Are there any graphs where the graph crosses the y axis in more than one place? \

#139: Do an internet search for "Equivalent Equations".