**Honors Precalculus**  
**Summer Homework 2020**

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**What is Precalculus?**

This class builds on your knowledge from Algebra I, Algebra II, and Geometry. You will use symbolic reasoning and analytical methods to represent mathematical situations, to express generalizations, and to study mathematical concepts and the relationships among them. You will use functions, equations, and limits as useful tools for expressing generalizations and as a means for analyzing and understanding a broad variety of mathematical relationships. You will also use functions as symbolic reasoning to represent and connect ideas in geometry, probability, trigonometry, and calculus and to model physical reasoning to represent and connect ideas from the areas mentioned above. This course will focus not only on learning the necessary skills and operations but also on the mathematical theories and implications of the concepts.

**What Honors Precalculus is NOT about!?!?!??**

This will NOT be a “watch what I do, do what I do” course. You will be actively involved in creating your own knowledge. **TEST WILL NOT BE CARBON COPIES OF THE REVIEW.** In order to better assess your understanding, you will be required to apply the information you have learned in a new context on the tests. At the end of this course, you will be prepared to take AP Calculus and be able to think at a higher level of mathematical intellect – you will have developed the ability to answer questions that stem from your own curiosity!!!

**What is the summer homework?**

**Part 1:** Located on my website kleinkeland.weebly.com, you can find a copy of the worksheets that need to be completed. These worksheets are all based on skills that you have learned in Algebra and Geometry. There are also included in this file!

**Part 2:** Sign-up for Remind101: **Text @20hpc21 to 81010**  
do this by August 1st: 2 points  
Do this by the end of the first week of school: 1 point

**Part 3:** Read the informational sheet entitled “Prerequisite Quiz”. If this is returned on or before the first day of school you will earn 2 points, otherwise you can earn 1 point.

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**Do you need Extra Help or Want Extra Credit?**

Not only will you have a chance to ask questions on this homework before you turn it in, but you can also turn in THE ENTIRE PACKET before school starts and earn extra credit.  
If possible we will have a review session and turn in early time at the high school on August ??, 2020 I will be at ABHS in the morning. **(Date and time will be spent via Remind101)**. (Alternative plan will be a zoom session and a scanned pdf submission of homework)! At any point during this time you can come visit me in room N108 for help or to turn in your summer homework. If you turn it in during this time you will earn +5 extra credit points, the only extra credit during first quarter.

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**How will all of this summer homework be grade?**

It will be collected and graded for **completeness AND correctness.** You need to have work shown to receive full credit. You also need to have your answers highlight in YELLOW (no other color) or written on the given line. PLEASE WRITE ALL YOUR WORK DIRECTLY ON THESE SHEETS...NO ADDITONAL PAGES ARE NEEDED!!!

Any questions please email me rkleinke@abs.misd.net. **Enjoy your summer!!! Mrs. Kleinke**
Upon entering Honors Precalculus, there are certain mathematical skills I believe you must have a complete understanding of from Algebra II to ensure success in this course.

These skills include factoring (trinomials, perfect squares, perfect cubes), and exponent rules (radical and rational exponents – how to reduce, how to rewrite, what they mean). Exponents was the main focus of Algebra I and early Algebra II, however factoring was a large part of your Algebra II career (factoring Fridays sound familiar).

This quiz is different than any quiz you have taken or will take in the future….here is why!!

1. We will take this quiz together as a class the first or second week of school.
   a. If you turn in a perfect quiz (no mistakes) a 100% will go into the gradebook and you are done!!
   b. If you make any kind of mistake (from missing a negative to doing an entire problem wrong) you will be given a redo!
      i. You take a variation of the quiz up to five times. The numbers will be different but the concepts will be the same.
      ii. When you turn in a perfect quiz – you are DONE!! I will put a 100% in the gradebook.
      iii. If you get all the way to quiz #5 and still do not turn in a perfect quiz, I will grade this final one as is (meaning 9/10 = 90%)

2. You can retake this quiz at the end of class (during homework time), before school, or after school. You will never be allowed to start it at the beginning of the hour because this time is used for homework review. This quiz will take no more than 10 minutes.

3. You can only take the quiz once a day!

4. Extra Help is available if you feel like you do not understand one of these concepts! Come see me, I would love to help!!!

5. All quizzes must be completed by Halloween!! If you have not passed the quiz (or made it to version 5) a zero will be placed in the gradebook.

Again, the focus of this is not on the grade but your understanding of these two important concepts. I really need you to be able to factor and “play” with exponents with the same ease that you write your name.

If you have any questions on this quiz please email me at rkleinke@abs.misd.net.

Please sign below (both you and one parent). This shows me that everyone is aware of how this quiz works!!

*Return this page with your summer homework!!

Printed Student Name: _______________________________

Student Signature: _________________________________________________

Parent Signature: _______________________________________________
Honors Precalculus
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Name: _________________________________

Directions: Show all work in the space provided. Please highlight your final answer in yellow!!

1. Write the following in interval notation: CIRCLE OR HIGHLIGHT FINAL ANSWER!!
   a. $x$ is greater than or equal to 2 but less than or equal to 6.
   b. $x$ is negative
   c. $-4 < x \leq 1$

2. Write the following in inequality notation: CIRCLE OR HIGHLIGHT FINAL ANSWER!!
   a. $(-7, -2)$
   b. $x$ is greater than 11

3. Simplify the expressions. Assume that variables in the denominators are nonzero. CIRCLE OR HIGHLIGHT FINAL ANSWER!!
   a. $\frac{(x^{-3} y^2)^4}{(x^{-4} y^6)^2}$
   b. $\frac{(3x^2)^2 y^4}{3y^2}$
   c. $\left(\frac{4x^3 y}{x^2 y^3}\right) \left(\frac{3y^2}{2x^2 y^4}\right)$

4. Find the midpoint of the segment with points $(5, -2)$ and $(-1, -4)$
   4. _____________________

5. Find the center and the radius of the circle with the equation $(x + 5)^2 + (y - 3)^2 = 121$
   Center: _________________   Radius: _________________
6. Solve the equations given below. Please write all answers as REDUCED IMPROPER fractions. NO decimals or mixed numbers!! CIRCLE OR HIGHLIGHT FINAL ANSWER!!
   a. \(2x - 9 = 3\)
   b. \(\frac{x - 1}{3} + \frac{x + 5}{4} = \frac{1}{2}\)
   c. \(3(5x - 3) - 4(2x + 1) = 5x - 2\)
   d. \(\frac{x + 5}{8} - \frac{x - 2}{2} = \frac{1}{3}\)

7. Solve the inequality. Represent your final answer in INTERVAL NOTATION. Only use improper fractions, no decimals!! CIRCLE OR HIGHLIGHT FINAL ANSWER!!
   a. \(3x - 1 > 6x + 8\)
   b. \(4(1 - x) + 5(1 + x) > 3x - 1\)
   c. \(-1 \leq 3x - 2 < 7\)
   d. \(\frac{3 - 4x}{6} - \frac{2x - 3}{8} \geq 2 - x\)
8. Find the slope of the line through the pair of points (5, -3) and (-4, 12).

9. A line contains points (-3, -5) and (4, y). Find the value of y given the slope of this line is 3.

10. Find the point-slope form of the line that contains points (-3, -8) and (4, -1).

11. Find the general form of the line that contains (-1, -5) and (-4, -2).

12. Find the (a) parallel line and (b) perpendicular line to the given line $3x - 5y = 15$ that goes through the point (6, 1).
   a. _______________________
   b. _____________________________

13. Solve the equations without a calculator:
   a. $4(x + 1)^2 - 18$
   b. $(2x + 3)^2 - 169$
   a. __________
   b. __________
14. Solve the given equation using completing the square, give reduced radicals or fractions no decimals:

\[ 3x^2 - 6x - 7 = 0 \]

14. \( x = \) ________________

15. Solve the given equations using the quadratic formula. Give answer as reduced radicals, no decimals.

\[ 2x^2 - 3x + 1 = 0 \]

15. \( x = \) ________________

16. Solve the following problem algebraically:

\[ x + 2 - 2\sqrt{x + 3} = 0 \]

*No decimals please!

16. \( x = \) ________________

17. Solve the following inequalities algebraically. Write the final answer in INTERVAL notation with reduced fractions (no decimals or mixed numbers accepted for credit). CIRCLE OR HIGHLIGHT FINAL ANSWER!!

a. \( |x + 3| \leq 3 \)

c. \( |3 - 2x| < 5 \)
18. Factor each of the following expressions as much as possible, DO NOT SOLVE!! **CIRCLE OR HIGHLIGHT FINAL ANSWER!!**

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<tbody>
<tr>
<td>a.</td>
<td>$5x^3 - 20x$</td>
<td>d. $9x^2 - 16$</td>
</tr>
<tr>
<td>b.</td>
<td>$4x^2 - 4x + 1$</td>
<td>e. $9x^2 - 24x + 16$</td>
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<tr>
<td>c.</td>
<td>$x^3 + 64$</td>
<td>f. $27x^3 - 8$</td>
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19. If $f(a) = a^2 - 3a + 6$; find
(a) $f(-3)$  
(b) $f(x + 2)$

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<td>b.</td>
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20. A rectangular backyard is 5 meters longer than it is wide. One side of the square swimming pool will match exactly the width of the backyard. After the pool is built, the area left will only be 30 square meters. How wide is the backyard?

width: ____________