Dear Students & Parents:

Hello! I am Mr. Knapp, the MSTC Precalculus teacher at PLD. Attached, please find this year's summer assignment for MSTC Precalculus.

MSTC Precalculus is a rigorous and accelerated math class and serves as a strong foundation for the rest of the MSTC math sequence. As such, we want to make sure that everyone is correctly placed in the correct level math course by administering a placement text during the first few days of the semester.

It is not uncommon for us to have students who choose to begin the program with MSTC Algebra 2, even after taking Algebra 2 in middle school because of the increased rigor and depth of the MSTC course. If you feel you would benefit from taking the MSTC Algebra 2 course instead of starting with Precalculus, please contact our MSTC Director Ms. Pelphrey at elizabeth.pelphrey2@fayette.kyschools.us

In any event, this year's summer assignment for MSTC Precalculus will serve as practice for the Precalculus placement test. During the first few classes in August, students will be given the opportunity to ask questions on this assignment, prior to taking the placement exam. For all students, this summer assignment should serve as a review for some material and also will serve as our first summative grade of the school year. The placement test will then serve as a baseline to help make recommendations and ensure all students are scheduled properly.

I hope that you are ready to have a great school year, and I look forward to meeting you!

Sincerely,

Peter Knapp
peter.knapp@fayette.kyschools.us

MSTC Precalculus Summer Assignment

Grade:________________

Solve.

1) $4x^2 - 36x + 80 = 0$

2) $5n^2 + 2n - 6 = 3n$

3) $x^4 + 3x^2 - 54 = 0$

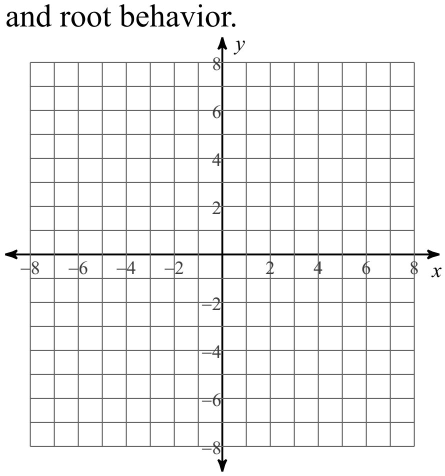
4) Find the vertex of $y = x^2 + 18x + 77$

Simplify.

5) $\dfrac{-10 + 5i}{-6 - 10i}$

Polynomials.

6) Sketch a graph of the polynomial $y = -x(x - 2)^2(x - 6)$ that has proper end and root behavior.



Solve each equation or inequalitiy.

7) $\left|3-4x\right|=13$

8) $2+5\left|8b+9\right|=7$

9) $\dfrac{\left|9x+7\right|}{8}\geq 2$

10) $\dfrac{x+4}{x}+\dfrac{x^2+5x-6}{x^2+3x}=\dfrac{x-6}{x^2+3x}$

11) $\dfrac{1}{b-1}=\dfrac{b^2-8b+16}{b-1}-(b-2)$

Algebraic Simplification. Simplify each expression.

12) $\dfrac{\dfrac{x^2}{x+4}}{\dfrac{16}{x^2}+\dfrac{4}{x}}$

13) $\dfrac{a-3}{\dfrac{3}{a^2-3a}-\dfrac{a-3}{a^2}}$

14) $\dfrac{n^2+4n+4}{n^3+2n^2-4n-8}$

15) $\dfrac{6n^3+54n^2}{10n-20}\div\dfrac{n^2+5n-36}{n^2-6n+8}$

Solve each equation. Remember to check for extraneous solutions.

16) $x = 4 + \sqrt{6 - x}$

17) $-1028 = -4 - 2r^{\frac{3}{2}}$

18) Write the following as a power of x: $\dfrac{1}{\sqrt[4]{x^3}}$

Perform the indicated operation.

19) $g(x) = x^2 - 2$
$h(x) = -2x - 1$
Find $g(h(x))$

Log Time! Solve the equations in 20-22. Simplify the expression in 23.

20) $\log_9 -2x + \log_9 8 = 1$

21) $\log_2 2x - \log_2 3 = 4$

22) $36^{-v-3} = 216$

23) $\log_3 u + 6\log_3 v$

Conic Sections.

24) Complete the square to find the radius and center of the circle $x^2 + y^2 - 18x + 26y + 241 = 0$

Find the value of the trig function indicated.

25) $\sin\theta$