**Calculus**

This course is intended for students who will be taking Calculus during the upcoming school year, or who have already taken Calculus and are looking for review and reinforcement. **This course assumes an understanding of all Precalculus and Trigonometry topics**. Please take the Calculus placement test before registering. A score of 70% or higher is recommended to enroll in this course.

**Course Topics**: Limits and Continuity, Differentiation, Applications of Derivatives, Integration, Applications of Integrals, Sequences and Series

**Calculus Placement Test**

Complete the following questions without the use of a calculator.

1. Simplify .
2. Find the domain of . Write your answer using interval notation.
3. Simplify .
4. Given , find and simplify .
5. Solve .
**For questions 6-8,  and.**
6. Find and simplify .
7. Find and simplify .
8. Find and simplify 
9. Given that  and , what is the value of ?
10. Solve .
11. If the number of cells in a culture doubles every hour, how many cells will be in the culture after a full day if at the beginning of the day there is a single cell in the culture?
12. Find the center and radius of the circle with equation 
13. Evaluate 
14. Solve .
15. Find .
16. Solve  on the interval ![<math xmlns="http://www.w3.org/1998/Math/MathML" display="block" data-is-equatio="1" data-latex="\left[0,2\pi\right]"><mrow data-mjx-texclass="INNER"><mo data-mjx-texclass="OPEN">[</mo><mn>0</mn><mo>,</mo><mn>2</mn><mi>π</mi><mo data-mjx-texclass="CLOSE">]</mo></mrow></math>]().
17. What is the remainder when  is divided by ?
18. Find the inverse function of .
19. Find the product of  and write your answer in standard form.
20. Identify the vertical asymptotes of .

Answer Key

1.  2.)  3.)  4.)  5.)  6.)  7.)  8.) 7 9.)  10.) -1 11.)  12.) center: (2,-6) radius:  13.) 3 14.)  15.)  16.)  17.) 2 18.) ![<math xmlns="http://www.w3.org/1998/Math/MathML" display="block" data-is-equatio="1" data-latex="f^{-1}=\sqrt[3]{x-6}+6"><msup><mi>f</mi><mrow data-mjx-texclass="ORD"><mo>−</mo><mn>1</mn></mrow></msup><mo>=</mo><mroot><mrow><mi>x</mi><mo>−</mo><mn>6</mn></mrow><mn>3</mn></mroot><mo>+</mo><mn>6</mn></math>]() 19.) 23+15i 20.) 

Scoring Guidelines

70% or higher (14 or more correct): Calculus recommended

 Under 70% (0-13 correct): Precalculus/Trigonometry recommended