LSU Dual Enrollment Program for Math

COURSE PROFILE

Content Revised 4-4-2022

**COURSE NAME: Precalculus (1 semester, prep for LSU’s Math 1431 Business Calculus)**

**HIGH SCHOOL COURSE CODE: 160348**

**PRIMARY ONLINE CONTENT SOURCE: *Calculus for Business, Economics, Life, and Social***

***Sciences, 14e,* *MyMathLab,* Barnett, Ziegler, Byleen**

**COURSE/UNIT CREDIT: 1/2 Carnegie Unit**

**GRADE(S): 11 or 12**

**Units-**

**1 – Basic Review**

**2 – Equations**

**3 – Functions**

| **SECTION NAMES (NUMBER OF EXERCISES) AND LEARNING OBJECTIVES** |
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| **Unit 1: Basic Review** |
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| **Homework 1: Basic Number Concepts (19)**  Multiply and divide fractions  Add and subtract fractions  Simplify using order of operations  Graph inequalities on number lines and write them as intervals |
| **Homework 2: Exponents and Radicals (20)**  Use properties of exponents  Simplify radicals  Use radicals and rational exponents |
| **Unit 2: Equations** |
| **Homework 3: Linear Equations (25)**  Solve linear equations  Write linear equations  Graph linear equations  Solve systems of linear equations in two variables |
| **Homework 4: Quadratic Equations (18)**  Factor trinomials  Solve quadratic equations using the square root property  Solve quadratic equations by factoring  Solve quadratic equations using the quadratic formula |
| **Homework 5: Other Types of Equations (14)**  Solve equations with variable(s) in the denominator  Solve equations with radical  Solve equations of quadratic type |
| **Unit 3: Functions** |
| **Homework 6: Functions: Domain, Range, and Evaluation (27)**  Determine whether sets, mappings, or tables define a function  Determine whether a graph defines a function  Find the domain and range of functions  Find function values from a graph  Evaluate functions  Form the sum, difference, product, and quotient of two functions |
| **Homework 7: Functions: Properties of Functions (22)**  Find the domain of a function  Determine whether an equation defines a function and, if so, find the domain  Find the value of a function  Identify the graph of a function  Use a graph to find where a function is increasing, decreasing, or constant  Use a graph to find if a function is even or odd  Use a graph to locate local maxima and local minima  Find local maxima and minimum  Determine where a function is increasing or decreasing  Find the average rate of change of a function |
| **Homework 8: Graphs of Basic Functions and Polynomials (21)**  Find the equation of lowest degree that has a given graph and intercepts  Analyze graphs of basic functions  Graph piecewise-defined functions  Graph and analyze quadratic functions  Sketch and analyze the graphs of polynomial functions  Describe the end behavior of the graph of a polynomial function  Factor polynomial functions and sketch their graphs  Find a polynomial function with real coefficients which satisfies given conditions |
| **Homework 9: Functions: Transformations and Compositions (23)**  Graph functions using transformations  Find composite functions  Find the domain of composite functions  Decompose functions |
| **Homework 10: Rational Expressions (21)**  Divide rational expressions using long division  Simplify rational expressions  Add and subtract rational expressions  Simplify complex rational expressions  Rationalize numerators and denominators |
| **Homework 11: Rational Functions (20)**  Simplify complex rational expressions  Solve rational equations  Find equations of asymptotes and graph rational functions  Sketch graphs of rational functions and estimate function values |
| **Homework 12: Exponential Functions (19)**  Graph exponential functions  Graph exponential functions using transformations  Use compound interest formulas  Write an exponential function for a given graph  Solve applications involving exponential functions |
| **Homework 13: Logarithmic Functions (36)**  Evaluate logarithms using properties of logarithms  Evaluate logarithms using technology  Apply laws of logarithms to express as a sum, difference, and/or product  Apply laws of logarithms to express as a single logarithm  Solve exponential equations  Solve logarithmic equations |
| **Homework 14: Common Algebra Applications in Calculus (16)**  Solve perimeter, area, and volume problems  Solve percent increase and percent decrease problems  Solve simple interest problems  Model exponential growth and decay |