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 fractionsAdd and subtract fractionsSimplify using order of operationsGraph inequalities on number lines and write them as intervals |
| **Homework 2: Exponents and Radicals (20)**Use properties of exponentsSimplify radicalsUse radicals and rational exponents |
| **Unit 2: Equations** |
| **Homework 3: Linear Equations (25)**Solve linear equationsWrite linear equationsGraph linear equationsSolve systems of linear equations in two variables |
| **Homework 4: Quadratic Equations (18)**Factor trinomialsSolve quadratic equations using the square root propertySolve quadratic equations by factoringSolve quadratic equations using the quadratic formula |
| **Homework 5: Other Types of Equations (14)**Solve equations with variable(s) in the denominatorSolve equations with radicalSolve equations of quadratic type |
| **Unit 3: Functions** |
| **Homework 6: Functions: Domain, Range, and Evaluation (27)**Determine whether sets, mappings, or tables define a functionDetermine whether a graph defines a functionFind the domain and range of functionsFind function values from a graphEvaluate functionsForm the sum, difference, product, and quotient of two functions  |
| **Homework 7: Functions: Properties of Functions (22)**Find the domain of a functionDetermine whether an equation defines a function and, if so, find the domainFind the value of a functionIdentify the graph of a functionUse a graph to find where a function is increasing, decreasing, or constantUse a graph to find if a function is even or oddUse a graph to locate local maxima and local minimaFind local maxima and minimumDetermine where a function is increasing or decreasingFind 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 interceptsAnalyze graphs of basic functionsGraph piecewise-defined functionsGraph and analyze quadratic functionsSketch and analyze the graphs of polynomial functionsDescribe the end behavior of the graph of a polynomial functionFactor polynomial functions and sketch their graphsFind a polynomial function with real coefficients which satisfies given conditions |
| **Homework 9: Functions: Transformations and Compositions (23)**Graph functions using transformationsFind composite functionsFind the domain of composite functionsDecompose functions |
| **Homework 10: Rational Expressions (21)**Divide rational expressions using long divisionSimplify rational expressionsAdd and subtract rational expressionsSimplify complex rational expressionsRationalize numerators and denominators  |
| **Homework 11: Rational Functions (20)**Simplify complex rational expressionsSolve rational equationsFind equations of asymptotes and graph rational functionsSketch graphs of rational functions and estimate function values |
| **Homework 12: Exponential Functions (19)**Graph exponential functionsGraph exponential functions using transformationsUse compound interest formulasWrite an exponential function for a given graphSolve applications involving exponential functions |
| **Homework 13: Logarithmic Functions (36)**Evaluate logarithms using properties of logarithmsEvaluate logarithms using technologyApply laws of logarithms to express as a sum, difference, and/or productApply laws of logarithms to express as a single logarithmSolve exponential equationsSolve logarithmic equations |
| **Homework 14: Common Algebra Applications in Calculus (16)**Solve perimeter, area, and volume problemsSolve percent increase and percent decrease problemsSolve simple interest problemsModel exponential growth and decay |