

MATH 150 PRE-REQUISITE SKILLS

GEOMETRY

1. Know basic properties of rectangles, parallelograms, trapezoids, circles and triangles.
2. Set up and solve proportions for missing side(s) of similar geometric figures.

GENERAL FUNCTIONS

1. Be able to use basic function concepts and vocabulary such as definition of a function, function notation, domain/ range, independent/dependent variable, etc. for functions expressed verbally, numerically, graphically or algebraically.
2. Identify a function as even, odd, or neither from its graph or defining equation.
3. Identify the effect of basic transformation $f(ax)$, $f(x + a)$, $af(x)$, or $f(x) + a$ for any real number, a on the graph of $f(x)$.
4. Identify a given function as a power function, a root function, polynomial function, rational function, algebraic function, trig function, exponential function or logarithmic function from its defining equation or graph.
5. Sketch a rough graph of a power, root, rational, exponential or logarithmic function.
6. Identify the simpler functions that built a composite function.
7. Add, subtract, multiply, divide or compose functions.
8. Understand and be able to use inverse function properties

ALGEBRA

1. Add, subtract, or multiply polynomials.
2. Add, subtract, multiply, divide or simplify rational expressions including complex fractions.
3. Evaluate algebraic expressions
4. Complete the square for general quadratic expressions
5. Solve systems of equations including 2×2 non-linear or 3×3 linear systems.
6. Identify a conic section in standard position from its equation.
7. Solve linear, polynomial, rational, radical, first-degree absolute value or basic exponential and logarithmic equations.
8. Solve linear, polynomial, rational, or first-degree absolute value inequalities.
9. Convert logarithms from any other (admissible) base to a natural logarithm.
10. Apply the Product, Quotient, and Power Rules of logarithms.
11. Find vertical and horizontal asymptotes of a rational function.
12. Identify intercepts and end behavior of a factorable polynomial.
13. Identify end behavior of polynomial, root, exponential and logarithmic functions.
14. Simplify expressions involving the composition of exponential and logarithmic functions, e.g. $e^{3 \ln x}$.
15. Factor polynomial expressions.
16. Find equation of a line.
17. Classify lines as parallel, perpendicular or neither using slope.
18. Simplify expressions containing real number or literal exponents using laws of exponents.
19. Translate verbal statement into algebraic statements

TRIG

1. Find the angle of inclination (in radians or degrees) for a line from its slope.
2. Know definitions of all six trig functions.
3. State the exact values of all six trig functions for the special angles (0 , $\pi/6$, $\pi/4$, $\pi/3$, $\pi/2$ and related angles).
4. Sketch a graph over the real number line for the sine, cosine, tangent and secant functions.
5. State the period of a trig function from its graph or defining equation.
6. Find all the missing sides, angles, and altitudes of a right triangle given any single side and one of the acute angles.
7. Use addition formulas for sine, cosine or tangent to find exact values for double angles, sums or differences of two angles.
8. Manipulate trig expressions by applying trig identities
9. Solve basic trigonometric equations

GRAPHING CALCULATOR

1. Find approximate points of intersection of graphs using graphing calculator

2. Using a graphing calculator, find an appropriate window and plot a complete graph of a function
3. Using a graphing calculator, find approximate zeros of a function