Calc 1 Concepts: Limits

- A limit is a fundamental concept in Calculus that describes the behavior of a function as the input approaches a certain value.
- For example, consider the function f(x) = 1/x. As x approaches 0, f(x) becomes very large (positive or negative). We say that the limit of f(x) as x approaches 0 does not exist.
- We can use limits to determine whether a function is continuous at a certain point. A function is said to be continuous at a point if the limit of the function at that point exists and is equal to the function value.
- Limits can be evaluated using several techniques. One such technique is direct substitution, which involves substituting the value of the input into the function and evaluating the resulting expression.
- Another technique for evaluating limits is factoring. This involves factoring the numerator and/or denominator of a function and canceling out common factors
- Rationalizing is another technique that can be used to evaluate limits. This involves multiplying the numerator and/or denominator by the conjugate of a radical expression.
- Trigonometric identities can also be used to evaluate limits involving trigonometric functions.

The following is a diagram of a vertical asymptote. There are no limits here