Math

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1 Problem 1

A polynomial is an expression with at least one variable. All powers in a polynomial must be non-negative integers. The degree of a polynomial is the degree of the term with the largest degree. The degree of a term is the exponents on the variables of the term added up.

For example the degree of the term $3x^2$, assuming x is a variable, would be 2 as x is the only variable and its exponent is 2. Similiarly the degree of $3x^2 + 5x + 2$ is 2 as $3x^2$ is the term with the largest degree 2.

Another example is the term x^2y, assuming both x and y are variables, the degree of the term is 3 as the exponent of x is 2 and the exponent of y is 1. $2 + 1$ is 3. Simillarily the degree of $2x^2y + x^2 + 2xy + 5$ is 3. As the degree of the largest term, $2x^2y$ is 3.

2 Problem 2

The degree of $ax^2 + x$ is 2 as the term with the largest degree is $ax^2 + x$.

3 Problem 3

a only affects the term ax^2, whereas x effects both terms. a is also usually a parameter, whereas x is usually a variable. The speed at which x increases/decreases compared to y decreases as a gets larger.

4 Problem 4

$(0, 0)$ is special as its the vertex as well as the x and y intercepts

5 Problem 5

When a is positive, as a gets larger, any given point aside from $(0, 0)$ gets closer to the line $x = 0$. When a is negative, as a gets smaller, any given point aside from $(0, 0)$ gets closer to the line $x = 0$. When a is 0 it is just a straight line $y = 0$