Answer on Question #56623 – Math – Algebra

1. What is the degree of the following monomial?

$-2f^2g^3h^5$

Solution

The degree of a monomial is the sum of the degrees of all its variables. The degrees of *f,g,h* are 2,3,5 accordingly. So, the degree of monomial is $n = 2 + 3 + 5 = 10$.

Answer: 10.

2. Which of the following expressions is a polynomial?

A: $f(x) = -2.1x^7 + 3x^2 + \frac{17}{2x}$

B: $f(x) = -\frac{1}{5}x^2 + 4.5x + 2^x$

C: $f(x) = \frac{4}{x} - 11x^2$

D: $f(x) = -3x^4 + 8x^2 + 2\sqrt{x} + 1$

Solution

A polynomial is the sum of one or more monomials where powers of the same variable(s) are non-negative (above or equal zero). Answers A and C contain the negative degree of x ($\frac{1}{x} = x^{-1}$), and the answer B has 2 raised to the power of *x*. In answer D all degrees of variable x are positive. So, the correct answer is D.

Answer: D.

3. What is the leading coefficient of this polynomial?

$f(x) = 3x^2 - \frac{1}{5}x^5 + 7x^{10}$

Solution

The term with the biggest exponent is called the “leading term”. The coefficient on the leading term is called the “leading” coefficient. In our case the leading term is $7x^{10}$ and the leading coefficient is 7.

Answer: 7.

4. What is another name for this polynomial, based on the number of terms it contains?

$g(x) = 5x^9 + 17x^5$

Solution

The function $g(x)$ is the sum of two terms: $5x^9$ and $17x^5$. The polynomial with two terms is called a binomial.

Answer: binomial.

5. Based on its degree, what kind of polynomial is this?

$h(x) = -x^2 + 2x - 5$

Solution

The degree of the leading term is the degree of the whole polynomial. In this case, the leading term is $-\mathrm{x}^2$ which has a degree of 2. So, such polynomial is called quadratic.

Answer: quadratic.

6. For the polynomial shown below, find *f*(1)

$f(x) = 3x^4 - x^3 + 4x - 2$

Solution

If $f(x) = 3x^4 - x^3 + 4x - 2$, then

$f(1) = 3 \cdot 1^4 - 1^3 + 4 \cdot 1 - 2 = 3 - 1 + 4 - 2 = 4.$

Answer: 4.