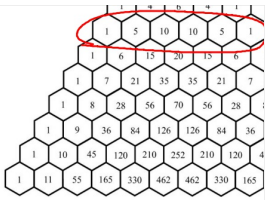
Expand and simplify. $(x^2 + 3y)^5$



$1(x^2)^5 + 5(x^2)^4(3y) + 10(x^2)^3(3y)^2$

$+ 10(x^2)^2(3y)^3 + 5(x^2)(3y)^4 + 1\cdot(3y)^5$

$= x^{10} + 5x^8(3y) + 10x^6(9y^2) + 10x^4(27y^3) + 5x^2(81y^4) + 243y^5$

$= x^{10} + 15x^8y + 90x^6y^2 + 270x^4y^3 + 405x^2y^4 + 243y^5$

Find the actual degree and leading coefficient.

$y = -6x^2(3x - 4)^3(7 - 5x)^2(2x+11)(12 - x)^3$

$\Rightarrow -6x^2(3x)^3(-5x)^2(2x)(-x)^3$

$\Rightarrow (-6x^2)(27x^3)(25x^2)(2x)(-x^3)$

$= 8100x^{11}$

Degree = 11

L.C. = 8100

State the end-behavior of each.

1. $y = 7x^3 - 14x - 6x^4 - 13x^2 + 43$

neg even

like a parabola that opens down ↙ ↘

(↙, ↘)

2. $y = 5x(3 - 4x)^3(7 - x)^3(3x + 1)^2$

add exponents = 9 ⇒ ODD

Leading Coeff: Pos

$(+)(-)^3(-)^3(+)^2$

$= (+)(-1)(-1)(+) = +$

like a line with a pos slope

(↙, ↗)

Coming next Chapter :

Simplify each:

1. $\sqrt{192x^6y^{10}}$

$64 \cdot 3$

square root of 64 is 8

$8x^3y^5\sqrt{3}$

when taking the square root of variables with exponents you divide the exponents by 2.

2. $\sqrt[3]{40a^{12}b^{30}}$

$8 \cdot 5$

cube root of 8 is 2

$2a^4b^{10}\sqrt[3]{5}$

when taking the square root of variables with exponents you divide the exponents by 2.

perfect cubes

8

27

64

125

Solve.

$$\sqrt{x-2}+3=7$$

Subtract 3 from both sides

$$-3 \quad -3$$

$$\sqrt{x-2}=4$$

square both sides

$$\left(\sqrt{x-2}\right)^2=(4)^2$$

add 2 to both sides

$$x-2=16$$
$$+2 \quad +2$$

$$x=18$$

To solve a radical equation you follow these general guidelines:

1. Isolate the radical
2. Raise both sides to the power that cancels the radical
3. Finish solving for x.