

Determine if each of the following are polynomials. If not, explain why not.

1.  $\frac{1}{2}x^3 + 2x - x^2 + 4$

Yes

2.  $x^3y + 2x - 5y^{1/2} + 3$

No,  $y^{1/2}$  is not allowed since only whole number exponents are allowed.

3.  $\frac{1}{x} + 3y - 7$

No, since  $\frac{1}{x} = x^{-1}$  and negative exponents are not allowed.

4.  $x^{27} + 3y^2 + 2x - 7$

Yes

For each of the following:

a) Find the degree of each term

b) Find the degree of the polynomial

c) Write the polynomial so that the powers of x are descending.

5.  $3xy^2 - 2x^2 + 3 - 4x^4$

a. Term Degree

$3xy^2$  3

$-2x^2$  2

3 0

$-4x^4$  4

b. 4

c.  $-4x^4 - 2x^2 + 3xy^2 + 3$

6.  $2x + \frac{4}{5}x^2 + 4x^4 - x^3y + 2ry$

a. Term Degree

$2x$  1

$\frac{4}{5}x^2$  2

$4x^4$  4

$-x^3y$  4

$2ry$  2

b. 4

c.  $4x^4 - x^3y + \frac{4}{5}x^2 + 2x + 2ry$

7.  $7xy + 3x^2y^3 - 5x^4y - 72$

a. Term Degree

$7xy$  2

$3x^2y^3$  5

$-5x^4y$  5

$-72$  0

b. 5

c.  $-5x^4y + 3x^2y^3 + 7xy - 72$

8.  $3x^2 - 2 + 4x^4 - 4x$

a. Term Degree

$3x^2$  2

$-2$  0

$4x^4$  4

$-4x$  1

b. 4

c.  $4x^4 + 3x^2 - 4x - 2$

9.  $3 - 2xy - 4x^2 + 6x^4 - x^3 + 7x^6z$

a. Term      Degree

3            0

$-2xy$       2

$-4x^2$       2

$6x^4$         4

$-x^3$         3

$7x^6y$       7

b. 7

c.  $7x^6z + 6x^4 - x^3 - 4x^2 - 2xy + 3$

10.  $\frac{1}{4}xy + 7y - 2rzx^2 + x^3 - \frac{1}{3}x^4$

a. Term      Degree

$\frac{1}{4}xy$       2

$7y$         1

$-2rzx^2$     4

$x^3$         3

$-\frac{1}{3}x^4$       4

b. 4

c.  $-\frac{1}{3}x^4 + x^3 - 2rzx^2 + \frac{1}{4}xy + 7y$