EX : 1 ***Is the algebraic expression polynomial or not*** ?

If so detemine the degree :

(1) $2x^3 - 5x^2 + 7x - 11$

(2) $4x^2 - 3\sqrt{x} + 6$

(3) $5x^4 + \frac{3}{x} + 2$

(4) $2x^2y^3 - 5x^3y^4 + 3xy^8$

EX : 2 ***Perform*** :

(1) $(12x^2 - 3x + 7) - (5x^2 + 4x - 2)$

(2) $(3x^2 + 2x - 5) + (2x^2 - 3y + 1)$

(3) $(3x^2y^3 - 2xy^2 + x) - (x^2y^3 + 4xy^2 - 5y)$

EX : 3 ***Product*** :

(1) $(3x - 4)(2x + 3)$

(2) $(2x + 5)(3x^2 - x + 7)$

EX : 4 ***Product :***

$(1)\ (3x-4)(3x+4)$

$(2)\ (5x^2+7y)(5x^2-7y)$

EX : 5 ***Product :***

$(1)\ (2x+3)^2$

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

$(3)\ (x-4y)^2$

EX : 6 ***Product :***

$(1)\ (2x+7)^3$

$(2)\ (3x-2)^3$

1 ***Is the algebraic expression polynomial or not ?***

If so detemine the degree :

(1) $5x^3 - 5x^{-2} + 7x - 11$

(2) $4x^2 - 3x + 6$

(3) $5x^4 + 6x^{\frac{2}{3}} + 2$

(4) $2xy^3 - 5x^2y^4 + 3xy^2$

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2 ***Perform :***

(1) $(2x^2 - 3x + 7) + (5x^2 + 14x - 12)$

(2) $(3x^2 - 4x - 5) - (2x^2 - 3x + 4)$

(3) $(3x^3y^2 - 12xy^2 + x - 6) - (x^3y^2 + 3xy^2 - 2y)$

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3 ***Product :***

(1) $(5x + 4)(2x + 3)$

(2) $(2x - 5)(3x^2 + 4x - 2)$

4 ***Product :***

$(1)\ (7xy+4)(7xy-4)$

$(2)\ (5x^2+3)(5x^2-3)$

---

5 ***Product :***

$(1)\ (5x-3)^2$

$(2)\ (3x+5y)^2$

$(3)\ (4x-1)^2$

---

6 ***Product :***

$(1)\ (x-3)^3$

$(2)\ (2x+5)^3$

Ex : 1 ***Factorize*:**

(1) $9x^2 - 25$

(2) $4x^2 - 81$

(3) $x^2 - 9y^2$

(4) $16x^4 - 1$

EX : 2 ***Factorize* :**

(1) $x^3 - 27$

(2) $8x^3 + 125$

(3) $216x^3 - 1$

EX : 3 ***Factorize* :**

(1) $x^2 - 3x - 28$

(2) $x^2 + 2x - 15$

(3) $2x^2 + 13xy + 15y^2$

(4) $x^2 - 8x + 16$

EX : 4 ***Factorize :***

(1) $5x + 40$

(2) $3x^2 - 6x$

(3) $15x^2 + 20x$

(4) $3x^3 - 12x$

EX : 5 ***Factorize :***

(1) $2x^3 + 10x^2 - 3x - 15$

(2) $2x^3 - 3x^2 + 8x - 12$

(3) $x^3 - 3x^2 - 4x + 12$

EX : 6 ***Factor completely :***

$7y^5 - 7y$

1 ***Factorize*:**

(1) $x^2 - 36$

(2) $4x^2 - 1$

(3) $9x^2 - y^2$

(4) $16x^4 - 81$

---

2 ***Factorize* :**

(1) $27x^3 + 8y^3$

(2) $x^3 - 64$

(3) $x^3 - 729$

---

3 ***Factorize* :**

(1) $x^2 + 3x - 10$

(2) $x^2 - 12x + 35$

(3) $6x^2 + 11x - 10$

(4) $x^2 + 10x + 25$

(5) $x^4 + 10x^2 - 11$

4 ***Factorize :***

$(1)\ 2x - 10$

$(2)\ 4x^2 + 24x$

$(3)\ 4x^2 - 10x$

$(4)\ 5x^2 - 45x$

---

5 ***Factorize :***

$(1)\ x^3 - 2x^2 - 5x + 10$

$(2)\ 2x^3 - x^2 + 6x - 3$

$(3)\ 2x^3 + 5x^2 - 18x - 45$

---

6 ***Factor completely :***

$2y^5 - 32y$

EX : 1 ***The number (s) must be excluded from the domain of each of the following rational expressions :***

(1) $\frac{x+2}{x-5}$

(2) $\frac{2x+7}{3x+12}$

(3) $\frac{x-3}{2x^2+9x-5}$

EX : 2 ***Simplify :***

$$\frac{2x+6}{x^2-9} \cdot \frac{x^2-x-6}{x^2+7x+10} =$$

EX : 3 ***Simplify :***

$$\frac{x^2-2x}{x^3-125} \div \frac{x^2+x-6}{x^2+5x+25} =$$

EX : 4 ***Perform :***

$$(1)\ \frac{2x}{x-5} - \frac{10}{x-5}$$

$$(2)\ \frac{x+1}{2x-14} + \frac{3x-6}{x-7}$$

EX : 5 ***Subtract:***

$$\frac{x+1}{x^2-x-12} - \frac{2}{5x+15}$$

1 ***The number (s) must be excluded from the domain of each of the following rational expressions :***

(1) $\frac{x-2}{x+5}$

(2) $\frac{2x-17}{6x-12}$

(3) $\frac{x-3}{x^2+9x}$

---

2 ***Divide :***

$$\frac{x^2-2x-3}{x^2+6x+5} \div \frac{x^2-9}{x^2-2x-15} =$$

---

3 ***Multiply :***

$$\frac{x^2-2x-8}{x^2-16} \cdot \frac{4x+4}{x^2+3x+2} =$$

4 ***Add or subtract :***

$$(1)\ \frac{7}{x+3} - \frac{4}{x-2}$$

$$(2)\ \frac{2x}{x-1} - \frac{4}{2x-2}$$

---

5 ***Add :***

$$\frac{3}{4x-12} + \frac{x-2}{x^2+x-12}$$

Q1 Choose the correct answer :

1) $(2x-7)^2$

a. $4x^2-14x+49$ b. $2x^2-28x+49$

c. $4x^2-28x+49$ d. $4x^2-28x-49$

2) *The degree of the polynomial* $2x^2y^3-5xy^7+8x^4y^2$

a. 7 b. 8

c. 6 d. 5

3) *The numbers must be excluded from the domain of the rational expression* $\frac{2x-8}{2x^2-10x}$

a. $\{4\}$ b. $\{10\}$

c. $\{0,5\}$ d. $\{5\}$

4) $(4x-5)^3$

a. $64x^3-240x^2+300x-125$ b. $64x^3-720x^2+300x-125$

c. $4x^3-60x^2+60x-125$ d. $64x^3+240x^2+300x-125$

5) *The factorization of* : $8x^3-125$ *is* :

a. $(2x-5)(4x^2-10x-25)$ b. $(2x-5)(4x^2-10x+25)$

c. $(4x-5)(16x^2+20x+25)$ d. $(2x-5)(4x^2+10x+25)$

6) *The domain of the function* $f(x)=\frac{x-3}{x^2+2x-15}$ *is* :

a. $R-\{3,-5\}$ b. $R-\{-5\}$

c. $R-\{3\}$ d. $(-\infty,-5)\cup(-5,\infty)$

7) *The product of* : $(2x^2+5)(2x^2-5)=$

a. $4x^2-25$ b. $4x^4-25$

c. $4x^4+25$ d. $4x^4-10x^2+25$

Q2 ***Find in the simplest form :***

1) $(3x^2 - 7x + 8) - (8x^2 + 6x - 8y - 12)$

2) $(3x - 5)(2x^2 - 7x + 4)$

Q3 ***Simplify :*** $\frac{2x-3}{x^2-5x+4} - \frac{2}{x-4}$

Q4 ***Factorize completly*** :

1) $2x^5 - 162x$

2) $x^3 - 2x^2 - 9x + 18$

Q5 ***Simplify*** : $\frac{x^2+4x+3}{x^2+x-6} \div \frac{5x+5}{x^2-4x+4}$

Good luck