

Assignment-2

Student Name: _____.

Course Title: General Mathematics.

Due Date: Next Week in Class..

Course Code: Math-101.

Answer the following questions.

(Q1.) Simplify using exponent properties, and express answers using positive exponents only.

(١) بسط بإستخدام خصائص الأسس وعبر عن الإجابة بإستخدام الأسس الموجب فقط.

1. $(x^2y^{-4})^0 =$

2. $\frac{3}{2^{-2}} =$

3. $(2x)^{-2} =$

4. $\frac{18 \cdot x \cdot y^{-5}}{9 \cdot x^{-3} \cdot y^4} =$

5. $(-2x^{-3})(3x^7) =$

6. $-3x^{-3} - (2x^5)^2 =$

7. $(x - 3y)^{-n} =$

8. $\left(\frac{10 \cdot x^2 \cdot y^{-5} \cdot z^3}{20 \cdot x^4 \cdot y^{-1} \cdot z}\right)^n =$

9. $\left(\frac{-2x^{-3}}{y^{-1}}\right)^{-2} =$

10. $\left(\frac{9 \cdot x^{-3} \cdot x^3}{3 \cdot y^{-3}}\right)^{-2} =$

(Q2.) Evaluate the following.

(٢) أوجد القيم التالية.

1. $(-16)^{\frac{1}{2}} =$

2. $-(16)^{\frac{1}{2}} =$

3. $(-27)^{\frac{1}{3}} =$

4. $0^{\frac{1}{2}} =$

5. $125^{\frac{1}{3}} =$

$$\boxed{1} \quad (x^2 y^{-4})^0 = 1$$

السؤال الأول

$$\boxed{2} \quad \frac{3}{2^{-2}} = 3 \cdot 2^2 = 3 \cdot 4 = 12$$

$$\boxed{3} \quad (2x)^{-2} = \frac{1}{(2x)^2} = \frac{1}{2^2 x^2} = \frac{1}{4x^2}$$

$$\boxed{4} \quad \frac{18 x y^{-5}}{9 x^{-3} y^4} = \frac{2 x^4}{y^9}$$

$$\boxed{5} \quad (-2x^{-3})(3x^7) = -6x^4$$

$$\boxed{6} \quad -3x^{-3} - (2x^5)^2 = -3x^{-3} - (4x^{10})$$

$$= -\frac{3}{x^3} - 4x^{10}$$

$$\boxed{7} \quad (x - 3y)^{-n} = \frac{1}{(x - 3y)^n}$$

$$\boxed{8} \quad \left(\frac{10 x^2 y^{-5} z^3}{20 x^4 y^{-1} z} \right)^n = \left(\frac{1 z^{3-1}}{2 x^{4-2} y^{-1+5}} \right)^n$$

$$\frac{z^{2n}}{2^n x^{2n} y^{4n}}$$

$$\boxed{9} \quad \left(\frac{-2x^{-3}}{y^{-1}} \right)^{-2} = \left(\frac{y^{-1}}{-2x^{-3}} \right)^2 = \frac{y^{-2}}{-2^{-2} x^{-6}}$$

$$= \frac{x^6}{4y^2}$$

$$\boxed{10} \left(\frac{9x^{-3}x^3}{3y^{-3}} \right)^{-2} = \left(\frac{3x^0}{y^{-3}} \right)^{-2} = \frac{1}{9y^6}$$

السؤال الثاني :-

$$\boxed{1} (-16)^{\frac{1}{2}} = \text{is not real}$$

$$\boxed{2} -(16)^{\frac{1}{2}} = -4$$

$$\boxed{3} (-27)^{\frac{1}{3}} = -3$$

$$\boxed{4} 0^{\frac{1}{2}} = 0$$

$$\boxed{5} 125^{\frac{1}{3}} = 5$$

$$6. 32^{\frac{1}{5}} =$$

$$7. 32^{-\frac{1}{5}} =$$

$$8. \left(\frac{25}{9} \right)^{-\frac{1}{2}} =$$

$$9. (84 \cdot x^4 \cdot y^{12})^{\frac{1}{2}} =$$

$$10. \left(\frac{4xy^{-1}}{2x^{-3}y^2} \right)^2 =$$

$$\boxed{6} 32^{\frac{1}{5}} = 2$$

$$\boxed{7} 32^{-\frac{1}{5}} = \frac{1}{32^{\frac{1}{5}}} = \frac{1}{2}$$

$$\boxed{8} \left(\frac{25}{9} \right)^{-\frac{1}{2}} = \left(\frac{9}{25} \right)^{\frac{1}{2}} = \frac{3}{5}$$

$$\boxed{9} (84 x^4 y^{12})^{\frac{1}{2}} = 8 x^{\frac{4}{2}} y^{\frac{12}{2}} = 8 x^2 y^6$$

$$\boxed{10} \left(\frac{4xy^{-1}}{2x^{-3}y^2} \right)^2 = \frac{2x^2y^{-2}}{x^{-6}y^4} = \frac{4x^8}{y^6}$$

(Q3.) Simplify and factor the following.

1. $9^{\frac{5}{2}} =$

2. $\sqrt{2} \cdot \sqrt{2} =$

3. $\sqrt[5]{(3 \cdot x^2 \cdot y)^5} =$

4. $\sqrt{6} \cdot \sqrt{2} =$

5. $10\sqrt{6} - 4\sqrt{6} =$

6. $(\sqrt{2} + 3x)(\sqrt{2} - 2x) =$

7. $3\sqrt{8} + 2\sqrt{18} =$

8. $\sqrt{\sqrt[6]{3x}} =$

9. $3\sqrt[4]{x^2} =$

10. $2\sqrt{27} + 5\sqrt{3} =$

11. $\sqrt{25x^4y^8} =$

السؤال الثالث

$$\boxed{1} \quad 9^{\frac{5}{2}} = (\sqrt{9})^5 = 3^5 = 243$$

$$\boxed{2} \quad \sqrt{2} \cdot \sqrt{2} = (\sqrt{2})^2 = 2$$

$$\boxed{3} \quad \sqrt[5]{(3x^2y)^5} = 3x^2y$$

$$\boxed{4} \quad \sqrt{6} \cdot \sqrt{2} = \sqrt{12} = \sqrt{4} \cdot \sqrt{3} = 2\sqrt{3}$$

$$\boxed{5} \quad 10\sqrt{6} - 4\sqrt{6} = 6\sqrt{6}$$

$$\boxed{6} \quad (\sqrt{2} + 3x)(\sqrt{2} - 2x)$$

$$= \sqrt{2}(\sqrt{2} - 2x) + 3x(\sqrt{2} - 2x) =$$

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

$$\boxed{7} \quad 3\sqrt{8} + 2\sqrt{18}$$

$$3\sqrt{4}\sqrt{2} + 2\sqrt{9}\sqrt{2} = 3 \cdot 2\sqrt{2} + 2 \cdot 3\sqrt{2}$$

$$6\sqrt{2} + 6\sqrt{2} = 12\sqrt{2}$$

$$\boxed{8} \quad \sqrt[4]{\sqrt[4]{3x}} = \sqrt[12]{3x}$$

$$\boxed{9} \quad 3 \sqrt[4]{x^2} = 3 \sqrt{\sqrt{x^2}} = 3 \sqrt{x}$$

$$\begin{aligned} \boxed{10} \quad & 2 \sqrt{27} + 5 \sqrt{3} \\ & 2 \sqrt{9 \cdot 3} + 5 \sqrt{3} \\ & = 2 \cdot 3 \sqrt{3} + 5 \sqrt{3} = 6 \sqrt{3} + 5 \sqrt{3} = 11 \sqrt{3} \end{aligned}$$

$$\boxed{11} \quad \sqrt{25x^4y^8} = 5x^2y^4$$

(Q4.) Determine the degree of the following polynomials. (حدد درجة كثيرات الحدود التالية.)

List of Polynomials	
Polynomials	Degree
$x^5 - 4x^3 + x^2 + 5x - 10$	الخامسة
$\sqrt[3]{x^3} - 4x^2 + x + 10$	الثانية
$y^2x^2 - 4y^3x^2 + 4xy^5$	السابعة

(Q5.) Evaluate the following polynomials.

(هـ) قيم كثيرات الحدود التالية.

$$1. (4x^3 - 5x^2 + 8x - 5) + (-x^3 + 10x^2 - 3x + 11) =$$

$$2. (4x^3 - 5x^2 + 8x - 5) - (-x^3 + 10x^2 - 3x + 11) =$$

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

السؤال الخامس :-

$$\begin{aligned} \text{II} \quad & (4x^3 - 5x^2 + 8x - 5) + (-x^3 + 10x^2 - 3x + 11) \\ & 3x^3 + 5x^2 + 5x + 6 \end{aligned}$$

$$\boxed{2} \quad (4x^3 - 5x^2 + 8x - 5) - (-x^3 + 10x^2 - 3x + 11)$$

$$(4x^3 - 5x^2 + 8x - 5) + (+x^3 - 10x^2 + 3x - 11)$$

$$5x^3 - 15x^2 + 11x - 16$$

$$\boxed{3} \quad (3x - 4)(2x^2 - 2x + 3)$$

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

$$6x^3 - 6x^2 + 9x - 8x^2 + 8x - 12$$

$$6x^3 - 14x^2 + 17x - 12$$