

TD2 : Powers, Roots, and Logarithm

Exercise 1: Read out the following terms and say their values.

$$3^5 : \text{-----}$$

$$\left(\frac{2}{3}\right)^5 : \text{-----}$$

$$x^5 : x^2 : \text{-----}$$

$$(5ab)^3 : \text{-----}$$

$$\left(\frac{x}{3y}\right)^4 : \text{-----}$$

$$x^5 : y^{-3} : \text{-----}$$

$$(5z)^0 : \text{-----}$$

Exercise 2: Read these expressions and simplify them.

$$3^5 * 3^2 : \text{-----}$$

$$\left(\frac{2}{3}\right)^5 : \text{-----}$$

$$7^5 : 7^2 : \text{-----}$$

$$(5^b)^3 : \text{-----}$$

$$\left(\frac{x^5}{y^3}\right)^4 : \text{-----}$$

$$(5z+t)^0 : \text{-----}$$

Exercise 3: Read these expressions and simplify them.

$$6^5 \times 6^3 : \text{-----}$$

$$6^5 \div 6^3 : \text{-----}$$

$$(2^3)^4 : \text{-----}$$

$$\left(\frac{x^7}{x^5}\right)^4 : \text{-----}$$

Exercise 4: Try to express in words these rules of powers:

1. $a^0 = 1, a \neq 0.$

2. $a^{-n} = \frac{1}{a^n}, a \neq 0$

3. $(a/b)^n = a^n/b^n$

4. $a^m : a^n = a^{m-n}$

Exercise 5: Read out the following radical expressions and say their exponential notation.

1. $\sqrt{4x^4}$
2. $\sqrt[4]{m^3n^8}$
3. $\sqrt[5]{a^3}$
4. $\sqrt[3]{8x^6y^9}$
5. $\sqrt{x^2+y^2}$

Exercise 6: Read out the following terms and say what their values are:

1. $243^{1/5}$
2. -4^{-2}
3. $125^{1/3}$
4. $(-5)^{-1}$
5. 3^{-3}

Exercise 7: Simplify these radicals

1. $\sqrt{72}$
2. $\sqrt{234}$
3. $\frac{5}{2+\sqrt{3}}$
4. $\frac{\sqrt{3}}{\sqrt{6}-\sqrt{2}}$

Exercise 8: Find the conjugate of these binomials

1. $2+\sqrt{5}$
2. $6-\sqrt{4}$

Exercise 9: Read out the following terms:

- a. $a^x \log b$
- b. $\log a^2$
- c. ${}^2 \log(1/6)$
- d. ${}^5 \log(x^2+y)$
- e. $({}^n \log x)2$
- f. ${}^6 \log^2 22 - {}^6 \log x^2 - 1$

Exercise 10: How do we say these mathematical terms?

1. $({}^3 \log x)^2 + {}^3 \log x^2 = \sqrt[4]{4-x^3}$
2. $x^{n \log(x+1)} = 0$
3. $\sqrt{2\sqrt{2}} = \log\left(\frac{x}{5}\right)$

Exercise 11: Read the complete answers.

1. $13^2 = \dots$
2. $2^9 = \dots$
3. Every positive real numbers has real-numbered square roots.
4. The cube root of two hundred and sixteen is
5. If the root of eighty-one is raised by three, then we have
6. 7 is the log base ten of