

# Important questions Of Exponents

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## Question 1

Evaluate

- (i)  $2^{-2}$
- (ii)  $(-2)^{-2}$
- (iii)  $(3/2)^{-5}$

## Answer

As we know that

$$b^{-n} = 1/b^n$$

$$(i) 2^{-2} = 1/2^2 = 1/4$$

$$(ii) (-2)^{-2} = 1/(-2)^2 = 1/4$$

$$(iii) (3/2)^{-5} = 3^{-5}/2^{-5} \\ = 2^5/3^5 = 32/243$$

## Question 2

Simplify and express the result in power notation with positive exponent.

$$(i) (-2)^5 \div (-2)^4$$

$$(ii) (1/2)^2 \times (2/5)^2$$

$$(iii) (-5)^2 \times (3/5)$$

## Answer

$$(i) (-2)^5 \div (-2)^4$$

$$= (-2)^5 / (-2)^4$$

$$= (-2)^{5-4}$$

$$= -2$$

$$(ii) (1/2)^2 \times (2/5)^2$$

$$= (1/4) \times (4/25)$$

$$= 1/25$$

$$\text{iii) } (-5)^2 \times (3/5)$$

$$= 25 \times (3/5)$$

$$= 15$$

### Question 3

Find the value of.

$$\text{(i) } (4^0 + 4^{-1}) \times 2^2$$

$$\text{(ii) } (3^{-1} \times 9^{-1}) \div 3^{-2}$$

$$\text{(iii) } (11^{-1} + 12^{-1} + 13^{-1})^0$$

### Answer

$$\text{i) } (4^0 + 4^{-1}) \times 2^2$$

$$= (1 + 1/4) \times 4$$

$$= 4 + 1 = 5$$

$$\text{ii) } (3^{-1} \times 9^{-1}) \div 3^{-2}$$

$$= [(1/3) \times (1/9)] \div (1/9)$$

$$= 1/3$$

$$\text{iii) } (11^{-1} + 12^{-1} + 13^{-1})^0$$

$$= 1 \text{ as } a^0 = 1$$

### Question 4

Find the value of  $x$  here

$$(11/9)^3 \times (9/11)^6 = (11/9)^{2x-1}$$

### Answer

$$(11/9)^3 \times (11/9)^{-6} = (11/9)^{2x-1}$$

$$(11/9)^{3-6} = (11/9)^{2x-1}$$

$$-3=2x-1$$

Or

$$x=-1$$

### Question 5

Find the value of  $m$  for which  $2^m \div 2^{-4} = 4^5$

### Answer

$$2^m \div 2^{-4} = 4^5$$

$$2^m \times (1/2^{-4}) = 2^{10}$$

$$2^{m+4} = 2^{10}$$

$$\text{So } m+4=10$$

$$m=6$$

### Question 6

Express the following numbers in standard form.

(i) 0.0000000015 (ii) 0.00000001425

(iii) 102000000000000000

### Answer

i)  $0.0000000015$   
 $=1.5 \times 10^{-9}$

ii)  $0.00000001425$   
 $=1.425 \times 10^{-8}$

iii)  $102000000000000000$   
 $=1.02 \times 10^{17}$

**Question 7**

Express the following numbers in usual form.

(i)  $34.02 \times 10^{-5}$  (ii)  $9.5 \times 10^5$

(iii)  $9 \times 10^{-4}$  (iv)  $2.0001 \times 10^8$

**Answer**

i)  $34.02 \times 10^{-5}$   
 $= .0003402$

ii)  $9.5 \times 10^5$   
 $= 950000$

iii)  $9 \times 10^{-4}$   
 $= .0009$

iv)  $2.0001 \times 10^8$   
 $= 200010000$