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Course Section :- MATH1901-24JANMNRT3

Ques-1 What is an example of a natural number that is not an Integer?

Ans-1 No, there is no example of a natural number (N) that is not an Integer (Z) as  $N \in Z$

Ques2 What is an example of a rational number that is not a natural number?

Ans2 Rational number (R)  $\in$  Integers (Z)  
 $-3/2$  is an example of R that is not a natural number (N)

More examples :-  $-5/7$ ,  $-21/22$ ,  $-61/9$

Ques3 Write the expression below in code notation.

$$\frac{6(ab+bc)}{4}$$

Code notation :-  $6 * (a * b + b * c) / 4$

Ques4 Simplify the expression below.

$$-(x)^0$$

Ans4  $-(x)^0 = -(1) = -1$

Ques5 Simplify the expression below

$$\left( \frac{-a^2 b^3 c^0}{4a^3 b^4 c^3} \right)$$

Ans 5

$$\left( \frac{-a^2 b^3 c^0}{4a^3 b^4 c^3} \right)^{-4}$$

Formula Used:-  $\frac{a^m}{a^n} = a^{m-n}$

$$\left( \frac{-a^2 b^3 c^0}{4a^3 b^4 c^3} \right)^{-4}$$

$$\left( -\frac{1}{4} a^{2-3} b^{3-4} \frac{c^0}{c^3} \right)^{-4}$$

$$c^0 = 1$$

$$\left( -\frac{1}{4} a^{-1} b^{-1} c^{-3} \right)^{-4}$$

$$\left( \frac{-1}{4abc^3} \right)^{-4} = \frac{1}{(-1/4abc^3)^4} = (-4abc^3)^4$$

$$(-4abc^3)^4$$

$$\boxed{\text{Ans} - 256 a^4 b^4 c^{12}}$$

Ques Simplify the expression below

$$\begin{aligned} 6. \quad & (3u^3v^4 + 9u) - (3u^3v^4 - 8u + 8u^2v^2) + (-8u^2v^2 + 8u^3v^4) \\ & 3u^3v^4 + 9u - 3u^3v^4 + 8u - 8u^2v^2 - 8u^2v^2 + 8u^3v^4 \\ & -16u^2v^2 + 8u^3v^4 + 17u \end{aligned}$$

$$\boxed{8u^3v^4 - 16u^2v^2 + 17u}$$

Ques 7 Solve for  $s$  in the expression below:

$$-28 + 2s = -2(3s - 8)$$

Sol<sup>n</sup> 7:

$$-28 + 2s = -6s + 16$$

$$-28 - 16 = -6s - 2s$$

$$+ 44 = + 8s$$

$$\frac{11}{2} \frac{44}{8} = s$$

$$2-8$$

$$\boxed{s = 11/2}$$

Verify:-

$$\text{LHS} = -28 + 2\left(\frac{11}{2}\right)$$

$$= -28 + 11$$

$$= -17$$

$$\text{RHS} = -2(3s - 8)$$

$$= -2\left(3 \times \frac{11}{2} - 8\right)$$

$$= -2\left(\frac{33}{2} - 8\right)$$

$$= -2\left(\frac{33 - 16}{2}\right)$$

$$= -(17)$$

$$= -17$$

$$\text{LHS} = \text{RHS}$$



Ques-8 Solve for  $x$  in the inequality below

$$3x + 9 \geq 42$$

Soln 8

$$3x + 9 \geq 42$$

$$3x \geq 42 - 9$$

$$3x \geq 33$$

$$\boxed{x \geq 11}$$

Ques 9 Solve for  $x$  in the inequality below

$$-4(-8 + x) > 40$$

Soln 9

$$-4(-8 + x) > 40$$

$$+32 - 4x > 40$$

$$-4x > 40 - 32$$

$$-4x > 8$$

Divide with  $+4$  on both side

Ans

$$\frac{-4x}{4} > \frac{8}{4}$$

$$-x > 2$$

As per rule, we divide reverse the inequality when we multiply (or divide) by negative number

$$\boxed{x < -2}$$

Ques 10 Write the expression below in exponential form

$$\sqrt[6]{(9a)^2}$$

Soln 10

Radical form :  $\sqrt[6]{(9a)^2}$

$$(9a)^{\frac{2 \times 1}{6 \times 3}} = (9a)^{\frac{1}{3}}$$

Exponential form :  $(9a)^{\frac{1}{3}}$

Q-11 Write the expression below in Radical form  
 $(2p+4)^{-4/3}$

Sol<sup>n</sup> 11 Exponential form:  $(2p+4)^{-4/3}$

$$= \frac{1}{(2p+4)^{4/3}}$$

$$= \frac{1}{(2p+4)^{4 \times 1/3}}$$

$$= \frac{1}{\sqrt[3]{(2p+4)^4}}$$

Radical form:  $\frac{1}{\sqrt[3]{(2p+4)^4}}$

Q-12 Simplify the following Expression  
 $(121x^8)^{1/2}$

Sol<sup>n</sup> 12

$$(121x^8)^{1/2}$$

$$\sqrt{121x^8}$$

$$\sqrt{(11x^4)^2}$$

$$(11x^4)^{2 \times 1/2}$$

Ans:-  $11x^4$