Things you should already know

Every problem contains a link to the page containing its solution. Some items may have further explanation which you will find by clicking on the button next to it.

Evaluate these and place the letter corresponding to each on the number line below. Place a dot on the number line and the letter above it!

A. $-\sqrt{2}$

B. -2^4

C. 5^0

D. $\pi - 1$

E. $-.3$

F. $.\overline{3}$

G. $\sqrt{3-7}$

H. $|3-5|$

I. $\frac{|x|}{x}$, if $x > 0$

J. $\frac{|x|}{x}$, if $x < 0$

K. additive identity element

L. additive inverse of $\frac{3}{4}$

M. multiplicative identity element

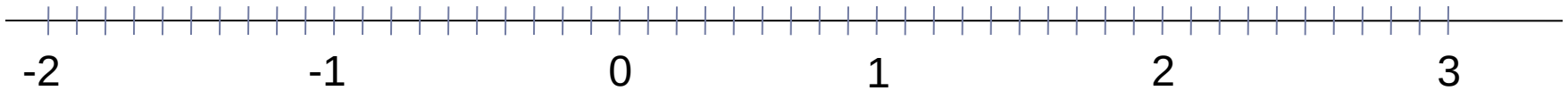
N. multiplicative inverse of $-\frac{3}{4}$

O. $\frac{0}{4}$

P. $\frac{4}{0}$

Q. $\frac{0}{0}$

R. $.\overline{9}$



Did you work this out on your own? Then you can check your SOLUTION

For the points A-O in the previous problem decide to which of these sets they belong:

- Set of real numbers, $\mathbb{R}$
- Set of rational numbers, $\mathbb{Q}$
- Set of irrational numbers, $\mathbb{I}$
- Set of integers, $\mathbb{Z}$
- Set of whole numbers, $\mathbb{N}$

Did you work this out on your own? Then you can check your SOLUTION

List all integers in each of the given intervals

$(-2,4]$

$[2,5]$

$(1,\infty)$

$(-\infty,1]$

$(3,4)$

Did you work this out on your own? Then you can check your SOLUTION

Write an example of each of the terms below using $5x^3 - 2x + 4 = 0$

- Equation
- Expression
- Term
- Factor
- Constant
- Coefficient
- Exponent

Did you work this out on your own? Then you can check your SOLUTION

Order of operations: please evaluate the following expressions

$3 \cdot 2 - 6 \div 4 + 3$

$4 + 3 \cdot 2^3 \div 4 - 2$

$2x^3 - \frac{x}{y} \cdot z + y \qquad \text{if } x = -2, y = 3, z = -6:$

Did you work this out on your own? Then you can check your SOLUTION

Evaluate the following exponents

2^3

-2^3

$(-2)^3$

2^4

-2^4

$(-2)^4$

Did you work this out on your own? Then you can check your SOLUTION

Evaluate the following powers – it will be to your advantage to be able to quickly recall and recognize these powers

2^0 2^1 2^2 2^3 2^4 2^5 ... 2^{10}

3^0 3^1 3^2 3^3 3^4 3^5

4^0 4^1 4^2 4^3 4^4

5^0 5^1 5^2 5^3 5^4

Did you work this out on your own? Then you can check your SOLUTION

Evaluate roots:

$\sqrt{64}$

$\sqrt[3]{64}$

$\sqrt[6]{64}$

$\sqrt{-64}$

$\sqrt[3]{-64}$

$\sqrt[6]{-64}$

Did you work this out on your own? Then you can check your SOLUTION

More exponents

$64^{2/3}$

$64^{3/2}$

$64^{-2/3}$

$64^{-3/2}$

$-64^{3/2}$

$(-64)^{2/3}$

Did you work this out on your own? Then you can check your SOLUTION

Rationalize the following expressions

$$\frac{5}{\sqrt{10}}$$

$$\frac{3}{\sqrt{5}-2}$$

$$\frac{\sqrt{2x^3}}{\sqrt{8x^6}}$$

Did you work this out on your own? Then you can check your SOLUTION

Rewrite the expressions so that they contain only positive rational exponents

$$\frac{5^{-1/2}\cdot 5x^{5/2}}{(5x)^{3/2}}$$

$$\sqrt[3]{\sqrt{8x^3y^6}}$$

$$\frac{32\cdot 8\cdot 2^4}{64\cdot 16\cdot 2^{-3}} = 2^n \qquad \text{then} \qquad n = ?$$

Did you work this out on your own? Then you can check your SOLUTION

Convert repeating decimals into fractions.

$.\overline{3}$ and $.\overline{9}$

Know terminology and division rules for 0

Define:

- *Additive identity*
- *Additive inverse*
- *Multiplicative identity*
- *Multiplicative inverse*

Which is defined:

- *0÷4*
- *4÷0*