VECTOR ARITHMETIC

EXAMPLE - VECTOR ARITHMETIC

Below are three vectors. Use the the MATLAB code box to help you answer the questions below.

```
% Use the vectors below to help you answer the questions.
x = 1:5;
y = -2:2;
z = -1:0.1:1;
```

```
5 result = x.*y
6
7
```

Help

Unanswered

result =

-2 -2 0 4 10

Run Code

Check

VECTOR MULTIPLICATION

What is the result of x*y?

- 10
- A MATLAB error ✔
- the row vector [-2, -2, 0, 4, 10]
- a column vector [-2; -2; 0; 4; 10]

EXPLANATION

The '*' operator performs matrix multiplication. Because x and y are both row vectors, they cannot be multiplied together according to the rules of linear algebra and MATLAB returns an error.

Check Hide Answer

POINTWISE MULTIPLICATION

Often we need to multiply each element of a vector by the corresponding element in another vector. For example, I want a vector [x(1)*y(1), x(2)*y(2),..., x(5)*y(5)].

What MATLAB code below produces this result?

- (•) x.*y ✔
- ( ) x*y
- ( ) You must use a FOR loop to do this.

Help

EXPLANATION

The '.*' operator performs element-wise multiplication. You can also use './' and '.^' for element-wise division and exponetiation.

Check | Hide Answer

VALID MATLAB OPERATORS

Test out the MATLAB commands below to determine which commands are valid and which commands return an error.

Check all valid MATLAB operations

- [ ] z^3
- [x] z.^3 ✔
- [ ] x + z
- [x] x + y ✔
- [x] 3*x ✔
- [ ] y.*z
- [ ] y./z
- [x] y./x ✔
- [x] y/3 ✔

EXPLANATION

To perform element-wise operations, the two vectors must have the same number of elements. However, when multiplying or dividing by a scalar, MATLAB internally expands the scalar to perform the element-wise operation.

Check | Hide Answer