Matlab/Freemat/Octave/Scilab : Powers and Roots

The symbol ^ is used to indicate raising a number to the power of another number in Matlab/Freemat/Octave/Scilab:

operation	Mathematical symbol(s)	Matlab/Freemat/Octave symbol
power	5^4	5^4

If we type the above in Matlab/Freemat/Octave/Scilab we obtain the following:

```
--> 5^4
ans =
625
```

Following the tutorial on Powers and Roots[1], powers and roots can similarly be found in Matlab as follows.

Matlab has a particular function sqrt for finding the square root of a number. For example $\sqrt{9} = 3$, and this is shown in Matlab:

```
--> sqrt(9)
ans =
3
```

Examples in Matlab of numbers with negative powers are given here:

```
--> 2^(-1)
ans =
0.5000
--> 5^(-3)
ans =
8.0000e-003
```

showing that $2^{-1} = \frac{1}{2} = 0.5$ and $5^{-3} = \frac{1}{5^3} = \frac{1}{5\times5\times5} = \frac{1}{125} = 0.008$.

[1] Powers and Roots

Examples in Matlab of numbers with fractional powers are given here,

```
--> 9^(1/2)
ans =
3
--> 8^(1/3)
ans =
2
--> 16^(3/4)
ans =
8
--> 4^(2.5)
ans =
32
```

showing that $9^{\frac{1}{2}} = \sqrt{9} = 3, 8^{\frac{1}{3}} = \sqrt[3]{8} = 2, 16^{\frac{3}{4}} = (\sqrt[4]{16})^3 = \sqrt[4]{16^3} = 8, 4^{2\frac{1}{2}} = 4^2 \times 4^{\frac{1}{2}} = 16 \times 2 = 32.$

Examples in Matlab of numbers with zero powers are given here,

```
--> 2^0
ans =
1

 --> 0.1^0
ans =
1


--> 0^0
ans =
1
```

showing that $2^0 = 1, (0.1)^0 = 1$ and $0^0 = 1.$