Intro to Mathematica:

Wolfram Languages:

- Capital letters to start all function names.
- Function arguments are enclosed by square brackets [].
- Lists, ranges, domains are enclosed by curly braces {}.
- Shift+ Enter to run.
- Multiplication use */space, example: a^b/a b. Don't use ab.

In[1]:=
```
16 / 728
```
Out[1]=
$$\frac{2}{91}$$

In[2]:=
```
N[2 / 91]
```
Out[2]=
```
0.021978
```

In[3]:=
```
ScientificForm[0.021978]
```
Out[3]//ScientificForm=
$$2.1978 \times 10^{-2}$$

In[10]:=
```
Solve[x^2 + 5 x + 6 = 0, x]
```
Set: Tag Plus in $6 + 5\,x + x^2$ is Protected.

Solve: 0 is not a quantified system of equations and inequalities.

Out[10]=
```
Solve[0, x]
```

In[6]:=
```
j = 5
```
Out[6]=
```
5
```

In[7]:=
```
k = 4
```
Out[7]=
```
4
```

In[8]:=
```
l = j + k
```
Out[8]=
```
9
```

In[9]:=
```
Clear[j]
```

In[11]:=
```
a = 23
```
Out[11]=
```
23
```

In[12]:=
```
b = 68
```
Out[12]= 68

In[13]:=
```
o = a * b
```
Out[13]= 1564

In[14]:=
```
Expand[(x - 2) (x + 2)]
```
Out[14]= $-4 + x^2$

In[15]:=
```
Apart[1 / ((1 + x) (1 + 5 x))]
```
Out[15]= $-\frac{1}{4\,(1+x)} + \frac{5}{4\,(1+5\,x)}$

In[16]:=
```
Factor[1 + 2 x + x^2]
```
Out[16]= $(1 + x)^2$

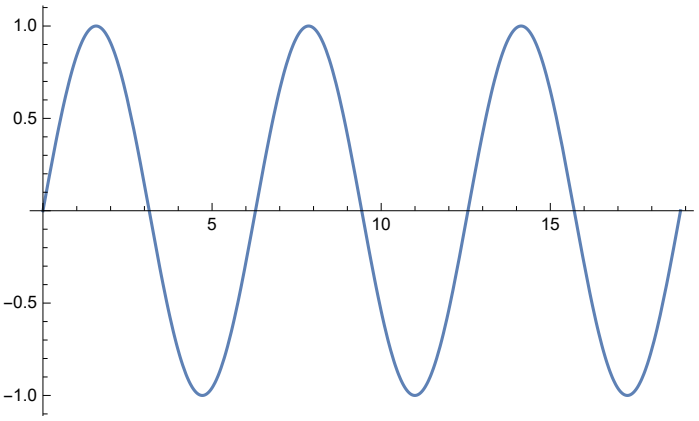
In[17]:=
```
Factor[(x^10 - y^10)]
```
Out[17]= $(x - y)\,(x + y)\,\left(x^4 - x^3\,y + x^2\,y^2 - x\,y^3 + y^4\right)\,\left(x^4 + x^3\,y + x^2\,y^2 + x\,y^3 + y^4\right)$

In[18]:=
```
Factor[(1 + x^10)]
```
Out[18]= $\left(1 + x^2\right)\,\left(1 - x^2 + x^4 - x^6 + x^8\right)$

In[19]:=
```
25
--
30
```
Out[19]= $\frac{5}{6}$

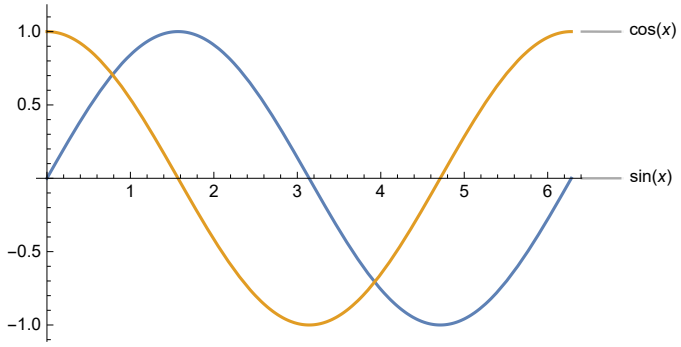
In[20]:=
```
N[%]
```
Out[20]= 0.833333

In[21]:=
```
Plot[Sin[x], {x, 0, 6 Pi}]
```
Out[21]=



In[23]:=
```
Plot[{Sin[x], Cos[x]}, {x, 0, 2 Pi}, PlotLabels → "Expressions"]
```

Out[23]=



In[25]:=
```
∑_{k=1}^{n} k
```

Out[25]=
$$\frac{1}{2} n (1 + n)$$

In[26]:=
```
f[x_] := x^2 - 3 x
```

In[27]:=
```
f[4]
```

Out[27]=
```
4
```

In[28]:=
```
Simplify[1 / 2 Sin[2 x]]
```

Out[28]=
```
Cos[x] × Sin[x]
```

In[29]:=
```
A = {23, 56, 7, 88, 45}
```

Out[29]=
```
{23, 56, 7, 88, 45}
```

In[30]:=
```
Min[A]
```

Out[30]=
```
7
```

In[31]:=
```
Max[A]
```

Out[31]=
```
88
```

In[32]:=
```
∑_{k=1}^{n} k^2
```

Out[32]=
$$\frac{1}{6} n (1 + n) (1 + 2 n)$$

In[34]:=
```
f[y_] := y^3 - 4 y^2 + 5
```

In[35]:=
```
f[3]
```

Out[35]=
```
-4
```