Worksheet 1

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Contents

```
# Basic Calculations in SAGE
```

```
1+1
```

```
2
```

```
( 1 + 2 * (3 + 5) ) * 2
```

```
34
```

```
2^3
```

```
8
```

```
2**3
```

```
8
```

```
20/6
```

```
10/3
```

```
2^10
```

```
1024
```

```
2^100
```

```
1267650600228229401496703205376
```

```
2^1000
```

```
10715086071862673209484250490600018105614048117055336074437503883703510511249361224931983788156958581275946729175531468251871452856923140435984577574698574803934567774824230985421074605062371141877954182153046474983581941267398767559165543946077062914571196477686542167660429831652624386837205668069376
```

```
20.0 / 14
text(r"Text and LaTeX: $\alpha^3 + 1$", (1,1), color="black", \
    fontsize=15, rotation=30)
```
1.42857142857143

```
numerical_approx(20/14)
```
1.42857142857143

```
numerical_approx(2^1000)
```
1.07150860718627e301

```
divmod(10,3)
```
(3, 1)

```
factorial(5)
```
120

```
binomial(5,3)
```
10

```
factor(700)
```
2^2 * 5^2 * 7

```
sin(pi)
```
0

```
tan(pi/6)
```
1/3*sqrt(3)

```
#Symbolic Variables in SAGE
#The symbolic variables should be explicitly declared before being \
    used (SR)
# Either SR.var() or simple var()
```

```
y = SR.var('z')
```

```
2*y + 3
```
2*z + 3

```
# Value substitution
```

```
x = SR.var('x')
expr = sin(x); expr
```

sin(x)

```
expr(x=1)
```

sin(1)

```
#Graphics in SAGE
plot(sin(2*x), x, -pi/2, pi)
```