**0.1** Questions to be handed in for project 1: Julia as a calculator Read about this topic here

#### 0.1.1 Expressions

• Compute the following value:

$$(5/9)(-10-32)$$

• Compute the following value:

$$9/5(100) + 32$$

• Compute the following value:

$$-4.9 \cdot 10^2 + 19.6 \cdot 10 + 58.8$$

• Compute the following value:

$$\frac{1+2\cdot 3}{4+5^6}$$

### 0.2 Math functions

• Compute the following value:

$$\sqrt{0.25 \cdot (1 - 0.25)/100}$$

• Compute the following value:

$$\sin^2(\pi/3) \cdot \cos((\pi/6)^2)$$

• Compute the following value:

# $e^{(1/2)\cdot(3-2.3)^2}$

• Compute the following value:

$$1 + \frac{1}{2} + \frac{1}{2 \cdot 3} + \frac{1}{2 \cdot 3 \cdot 4} + \frac{1}{2 \cdot 3 \cdot 4 \cdot 5}$$

• Compute the following value:

$$\frac{5}{\cos(57^\circ)} + \frac{8}{\sin(57^\circ)}$$

# 0.3 Precedence

• Which binary operation happens first in this expression:

$$1 - 2 + 3 * 4^5/6$$

• Which binary operation happens first in this expression:

$$1 - 2 - 3 + 4 + 5$$

• Which binary operation happens first in this expression:

$$1 - 2 * 3^{(4+5)}$$

• Which binary operation happens first in this expression (after you put in any necessary parentheses)

$$\frac{1-2}{3+4}$$

# 0.4 Variable

 $\bullet\,$  Let x=4 and y=7 compute

$$x - \sin(x+y)/\cos(x-y)$$

• For the polynomial

 $y = ax^2 + bx + c$ Let a = 0.00014, b = 0.61, c = 649, and x = 200. What is y?

• If

$$\frac{\sin(\theta_1)}{v_1} = \frac{\sin(\theta_2)}{v_2}$$

and  $\theta_1 = \pi/5$ ,  $\theta_2 = \pi/6$ , and  $v_1 = 2$ , find  $v_2$ .

• Suppose  $v = 2 \cdot 10^8$  and  $c = 3 \cdot 10^8$  compute

$$\frac{1}{\sqrt{1 - v^2/c^2}}$$

### 0.5 Numbers

- Which is bigger: 1e-10 or 8e-9?
- Are 22/7 and 22//7 different. How so? (This is about how julia stores values.)