

## Basic Mathematics Solutions

### 1. True or False: $\ln(8) = \ln(4) + \ln(4)$

This answer is False. We know from our log rules that  $\ln(a) + \ln(b) = \ln(ab)$ .

Therefore,  $\ln(4) + \ln(4) = \ln(16)$

### 2. Simplify: $6!/8!$

$$6! = 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$$

$$8! = 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$$

Therefore,  $6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$  cancel out, which leaves  $1/(8 \cdot 7) = 1/56$

### 3. What is the slope of the line $3x + 5y = 10$ ?

$$\begin{aligned} \text{Solve for } y: \quad 5y &= -3x + 10 \\ y &= -3/5x + 2 \end{aligned}$$

Therefore, the slope =  $-3/5$

### 4. Solve for x and y:

$$10x + 3y = 20$$

$$5x - 2y = 10$$

I would multiply the second equation by a -2 and add the two equations together.  $10x$  and  $-10x$  sum to zero

$$10x + 3y = 20$$

$$\underline{-10x + 4y = -20}$$

$$0 + 7y = 0$$

$y=0$ . Plug this back in and you get  $x=2$ . Solution:  $(2, 0)$