Read each problem **very carefully** before starting to solve it. Each problem is worth 5 points. It is necessary to **show neatly all your work**. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. Recall that $pH = -\log [H^+]$, where $[H^+]$ is the concentration of hydrogen ions in moles/liter in a given solution. Lower levels of pH indicate a more acidic solution. If the pH of ketchup is 3.9 and the pH of peanut butter is 6.3, how much more acidic is ketchup than peanut butter?

2. Solve the following logarithmic equation manually:

$$\ln (x + 2) + \ln x = \ln (x + 12).$$