

1. 2020.10.14, 7:45am

0: Please note that the due time is 11:59pm, Saturday, October 17, 2020.

Problem 2: Only need to express each of $\neg$, $\wedge$, and $\vee$ by using $\rightarrow$ and **T** and **F**.

Problem 4: For the 'only if' part, you might want to solve a system of linear equations to find out the needed coefficients.

Problem 5: The proof for $\sqrt{6}$ is very similar to that for $\sqrt{2}$. Use the definition of logarithmic function to prove the irrationality of $\log_2 5$.

Problem 6: If $\gcd(a, b) = 1$, then $\gcd(a^k, b) = 1$ for every positive integer k .

Problem 7: You need to find an absolute constant that is the greatest divisor of $a^4 - 1$ which works for all odd integers a .

2. 2020.10.15, 2:35pm

Problem 2: Only need to express $\neg$, $\wedge$, and $\vee$ using only $\rightarrow$, but **F** and **T** could be used.

Problem 7: The number you are looking for is independent from a , that means the number you are looking for does not contain a . It should be like 2, 5, or 311. It is a absolute constant.

[Here I used $\LaTeX$ for math symbols. If you have difficulty to read the content, please download the PDF file of this page.]