# Introduction to Logic
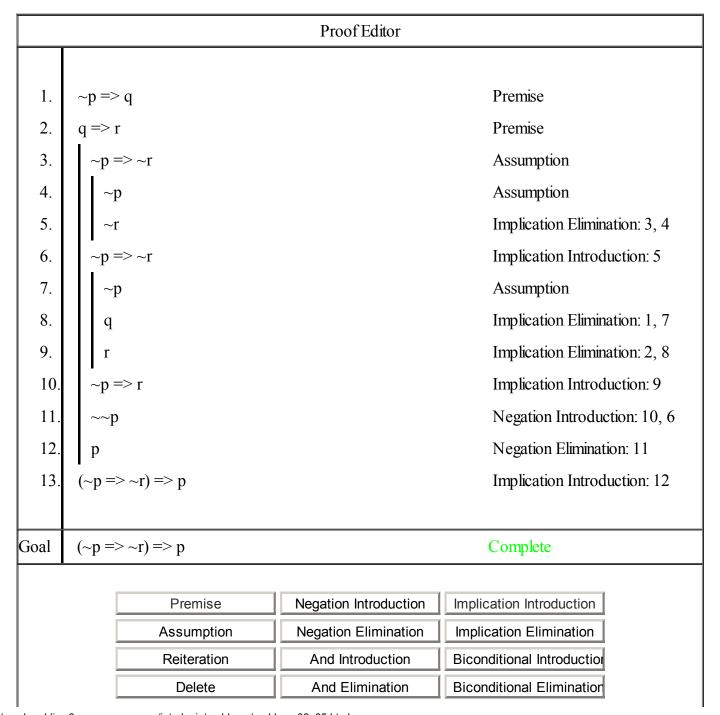
| Problem 3.5 - Fitch System |
|:---:|

Given ($\neg p \Rightarrow q$) and ($q \Rightarrow r$), use the Fitch System to prove (($\neg p \Rightarrow \neg r$) $\Rightarrow p$).

Start from the given premises. Apply rules of inference by checking the lines you wish to use as premises and click the button for the desired rule of inference. Reiteration allows you to repeat an earlier item. To delete one or more lines from a proof, check the desired lines and click Delete. Whenever entering expressions, use Ascii characters only. Use ~ for $\neg$; use & for $\wedge$; use | for $\vee$; use => for $\Rightarrow$; and use <=> for $\Leftrightarrow$.

| Proof Editor | | |
|:---|:---|:---|
| 1. | ~p => q | Premise |
| 2. | q => r | Premise |
| 3. | ~p => ~r | Assumption |
| 4. | ~p | Assumption |
| 5. | ~r | Implication Elimination: 3, 4 |
| 6. | ~p => ~r | Implication Introduction: 5 |
| 7. | ~p | Assumption |
| 8. | q | Implication Elimination: 1, 7 |
| 9. | r | Implication Elimination: 2, 8 |
| 10. | ~p => r | Implication Introduction: 9 |
| 11. | ~~p | Negation Introduction: 10, 6 |
| 12. | p | Negation Elimination: 11 |
| 13. | (~p => ~r) => p | Implication Introduction: 12 |

| Goal | (~p => ~r) => p | <span style="color:green">Complete</span> |
|:---|:---|:---|

| Premise | Negation Introduction | Implication Introduction |
|:---:|:---:|:---:|
| Assumption | Negation Elimination | Implication Elimination |
| Reiteration | And Introduction | Biconditional Introduction |
| Delete | And Elimination | Biconditional Elimination |

| Or Introduction |
|---|
| Or Elimination |

| Reset | Show XML |
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