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Rules of Inference Report

MATH-2305

March 4, 2018

Modus Ponens: (p ∧ (p → q)) → q

p: The program runs

q: There is not a syntax error in the code.

**Conclusion:**

The program runs.

If the program runs then there is not a syntax error in the code.

Therefore, there is not a syntax error in the code.

Modus Tollens: (￢q ∧ (p → q)) →￢p

p: The programming language is python.

q: I do not like the programming language.

**Conclusion:**

I like the programming language.

If the programming language is Python, I do not like it.

Therefore, the programming language is not Python.

Hypothetical syllogism: ((p → q) ∧ (q → r)) → (p → r)

p: You go to college for Computer Science.

q: You will make big bucks.

r: You can build a better gaming PC.

**Conclusion:**

If you go to college for CS, then you will make big bucks.

If you make big bucks, you can build a better gaming PC.

Therefore, if you go to college for CS, then you can build a better gaming PC.

Disjunctive syllogism: ((p ∨ q) ∧￢p) → q

p: You are smart.

q: You want to be cool.

**Conclusion:**

You are smart or you want to be cool.

You are not smart.

Therefore, you want to be cool.

Addition: p → (p ∨ q)

p: You hacked into the NSA.

q: You got a blizzard from Dairy Queen.

**Conclusion:**

You hacked into the NSA.

Therefore, you either hacked into the NSA or you got a blizzard from DQ.

Simplification: (p ∧ q) → p

p: You hate Apple.

q: You love Android.

**Conclusion:**

You hate Apple and you love Android.

Therefore, you hate Apple.

Conjunction: ((p) ∧ (q)) → (p ∧ q)

p: You ate pizza.

q: You need a Rolaid.

**Conclusion:**

You ate pizza.

You need a Rolaid.

Therefore, you ate pizza and need a Rolaid.

Resolution: ((p ∨ q) ∧ (￢p ∨ r)) → (q ∨ r)

p: Metal Gear Solid is the best video game.

q: The best video game is Street Fighter.

r: Super Mario Brothers is the best video game.

**Conclusion:**

Metal Gear Solid or Street Fighter is the best video game.

Metal Gear Solid is not the best video game or Super Mario Brothers is the best game.

Therefore, the best video game is Street Fighter or Super Mario Brothers.