

# Proof Tree Nesting Depth Test

**Test 1 : Simple ( depth 1 )**

$$\frac{\frac{\ulcorner p \urcorner^{[1]} \quad \overline{q} \text{ [axiom]}}{p \Rightarrow q} \quad [\Rightarrow\text{-intro}^{[1]}]$$

**Test 2 : Moderate ( depth 2 )**

$$\frac{\frac{\ulcorner p \urcorner^{[1]} \quad \frac{\frac{\ulcorner q \urcorner^{[2]} \quad \overline{r} \text{ [axiom]}}{q \Rightarrow r} \quad [\Rightarrow\text{-intro}^{[2]}]}{p \Rightarrow (q \Rightarrow r)} \quad [\Rightarrow\text{-intro}^{[1]}]$$

**Test 3 : Deep ( depth 3 )**

$$\frac{\frac{\ulcorner p \urcorner^{[1]} \quad \frac{\frac{\ulcorner q \urcorner^{[2]} \quad \frac{\frac{\ulcorner r \urcorner^{[3]} \quad \overline{s} \text{ [axiom]}}{r \Rightarrow s} \quad [\Rightarrow\text{-intro}^{[3]}]}{q \Rightarrow (r \Rightarrow s)} \quad [\Rightarrow\text{-intro}^{[2]}]}{p \Rightarrow (q \Rightarrow (r \Rightarrow s))} \quad [\Rightarrow\text{-intro}^{[1]}]$$

**Test 4 : Very Deep ( depth 4 )**

$$\frac{\frac{\ulcorner p \urcorner^{[1]} \quad \frac{\frac{\frac{\frac{\ulcorner s \urcorner^{[4]} \quad \overline{t} \text{ [axiom]}}{s \Rightarrow t} \quad [\Rightarrow\text{-intro}^{[4]}]}{r \Rightarrow (s \Rightarrow t)} \quad [\Rightarrow\text{-intro}^{[3]}]}{q \Rightarrow (r \Rightarrow (s \Rightarrow t))} \quad [\Rightarrow\text{-intro}^{[2]}]}{p \Rightarrow (q \Rightarrow (r \Rightarrow (s \Rightarrow t)))} \quad [\Rightarrow\text{-intro}^{[1]}]$$

**Test 5 : Horizontal siblings ( depth 2 )**

$$\frac{\frac{\ulcorner p \urcorner^{[1]} \quad \ulcorner q \urcorner^{[1]}}{p \wedge q} \quad [\wedge \text{ elim}]}{p \wedge q \Rightarrow r} \quad [\Rightarrow\text{-intro}^{[1]}]$$