**Logic Tool Results**

Main Expression:  
∃xP(x),∀x∃y(P(x)→Q(y))⊢∃yQ(y)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Line | Expression | Rule | First Segment | Second Segment | Third Segment |
| 1 | ∃xP(x) | Data |  |  |  |
| 2 | ∀x∃y(P(x)→Q(y)) | Data |  |  |  |
| ┌--------------------------------------------------------------------------------------------------------------┐ | | | | | |
| 3 | P(X0) | Assumption |  |  |  |
| 4 | X0 | None |  |  |  |
| 5 | ∃y(P(X0)→Q(y)) | ∀x e | 2 |  |  |
| ┌------------------------------------------------------------------------------------------------------┐ | | | | | |
| 6 | P(X0)→Q(Y0) | Assumption |  |  |  |
| 7 | Q(Y0) | MP | 3 | 6 |  |
| 8 | ∃yQ(y) | ∃y i | 7 |  |  |
| └------------------------------------------------------------------------------------------------------┘ | | | | | |
| 9 | ∃yQ(y) | ∃y e | 6 | 6-8 |  |
| └--------------------------------------------------------------------------------------------------------------┘ | | | | | |
| 10 | ∃yQ(y) | ∃y e | 1 | 3-9 |  |