(a) ((p ->q) <-> (~q ->~ p)) = 0

(a) ↙ ↘(a)

(b) (p ->q) = 0 (b) (p ->q) = 1

(c) (~q ->~ p) = 1 (c) (~q ->~ p) = 0

(c)↙ ↘(c) (b)↙ ↘(b)

(d) (~q) = 0 (d) (~p) = 1 (d) p = 0 (d) q = 1

(d) | (d) | (c) | (c) |

q = 1 p = 0 (e) (~q) = 1 (e) (~q) = 1

(b) | (b) | (f) (~p) = 0 (f) (~p) = 0

p = 1 q = 0 (f) | (e) |

q = 0 p = 1 p = 1 q = 0

(closed) (closed) (closed) (closed)

Since formulas A and B are equivalent iff there is a closed tableau for (A↔B) = 0 (and iff every tableau for (A↔B) = 0 is closed), (p ->q) and (~q ->~ p) are equivalent.