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Exercise 2.2.4

Consider F = {D → BK, AB → GK, B → H, CE → AG, H → E, K → G, EH → K, G → AH}

Prove by Amstrong:

a) F |= AB → GH

b) F |= DE → AG

c) F |= BH → EK

a/ AB → GK |= (f.rã) AB → G (1)

B → H |= (t.t) AB → AH |= (f.rã) AB → H (2)

(1), (2) |= (h.) AB → GH ■

b/ D → BK |= (t.t) DE → BEK (1)

K → G |= (t.t) BEK → GEK (2)

(1), (2) |= (b.c) DE → GEK |= (f.rã) DE → G (3).

D → BK |= (f.rã) D → K (4)

K → G (given) (5)

(4), (5) |= (b.c) D → G (6)

G → AH (given) (7)

(6), (7) |= (b.c) D → AH |= (f.rã) D → A |= (t.t) DE → AE |= (f.rã) DE → A (8).

(3), (8) |= (h.) DE → AG ■

c/ B → H |= (t.t) BH → H (1)

H → E (2) (given)

(1), (2) |= (b.c) BH → E (3).

B → H, H → E |= (b.c) B → E |= (t.t) BH → EH (4).

EH → K (given) (5)

(4), (5) |= (b.c) BH → K (6)

(3), (6) |= (h.) BH → EK ■