

- ① 1. $(x) (Ax \supset \sim Bx)$
2. $(\exists x) (Cx \cdot Ax) \therefore (\exists x) (Cx \cdot \sim Bx)$
- ② 1. $(\exists x) (Jx \cdot Kx)$
2. $(x) (Jx \supset Lx) \therefore (\exists x) (Lx \cdot Kx)$
- ③ 1. $(x) (Mx \supset Nx)$
2. $(\exists x) (Mx \cdot Ox) \therefore (\exists x) (Ox \cdot Nx)$
- ④ 1. $(x) (Dx \supset \sim Ex)$
2. $(x) (Fx \supset Ex) \therefore (x) (Fx \supset \sim Dx)$
- ⑤ 1. $(x) (Gx \supset Hx)$
2. $(x) (Ix \supset \sim Hx) \therefore (x) (Ix \supset \sim Gx)$
- ⑥ 1. $(\exists x) (Px \cdot \sim Qx)$
2. $(x) (Px \supset Rx) \therefore (\exists x) (Rx \cdot \sim Qx)$
- ⑦ 1. $(x) (Sx \supset \sim Tx)$
2. $(\exists x) (Sx \cdot Ux) \therefore (\exists x) (Ux \cdot \sim Tx)$
- ⑧ 1. $(x) (Vx \supset Wx)$
2. $(x) (Wx \supset \sim Xx) \therefore (x) (Xx \supset \sim Vx)$
- ⑨ 1. $(\exists x) (Yx \cdot Zx)$
2. $(x) (Zx \supset Ax) \therefore (\exists x) (Ax \cdot Yx)$
- ⑩ 1. $(x) (Bx \supset \sim Cx)$
2. $(\exists x) (Cx \cdot Dx) \therefore (\exists x) (Dx \cdot \sim Bx)$
- ⑪ 1. $(x) (Fx \supset Gx)$
2. $(\exists x) (Fx \cdot \sim Gx) \therefore (\exists x) (Gx \cdot \sim Fx)$

NOTES

MARCH

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2002

Thursday

$$\begin{aligned} (12) & 1. (\exists x) (P_x \cdot Q_x) \\ & 2. (\exists x) (Q_x \cdot R_x) \quad \therefore (\exists x) (P_x \cdot R_x) \end{aligned}$$

$$\begin{aligned} (13) & 1. (x) (A_x \supset B_x) \\ & 2. (\exists x) (R_x \cdot A_x) \\ & 3. (x) (B_x \supset \sim D_x) \quad \therefore (\exists x) (R_x \cdot \sim D_x) \end{aligned}$$

$$\begin{aligned} (14) & 1. (x) (Z_x \supset Y_x) \\ & 2. (x) (Y_x \supset M_x) \\ & 3. (x) (T_x \supset \sim M_x) \quad \therefore (x) (Z_x \supset \sim T_x) \end{aligned}$$

$$\begin{aligned} (15) & 1. (x) [(Y_x \supset Z_x) \vee A_x] \\ & 2. (\exists x) (\sim A_x \cdot \sim Z_x) \quad \therefore (x) (\sim Z_x \supset \sim Y_x) \end{aligned}$$

$$\begin{aligned} (16) & 1. (x) (C_x \supset \sim K_x) \\ & 2. (x) (\sim Y_x \supset A_x) \\ & 3. (x) (\sim K_x \supset \sim Y_x) \quad \therefore (x) (C_x \supset A_x) \end{aligned}$$

$$\begin{aligned} (17) & 1. (x) (\sim A_x \supset \sim S_x) \\ & 2. (x) (J_x \supset \sim A_x) \\ & 3. J_a \quad \therefore \sim S_a \end{aligned}$$

$$\begin{aligned} (18) & 1. (x) (D_x \supset S_x) \\ & 2. D_c \\ & 3. Wc \quad \therefore Sc \cdot Wc \end{aligned}$$

$$\begin{aligned} (19) & 1. (x) (T_x \supset A_x) \\ & 2. (\exists x) (M_x) \\ & 3. (x) (A_x \supset \sim M_x) \quad \therefore (\exists x) (\sim A_x \cdot \sim T_x) \end{aligned}$$

$$\begin{aligned} (20) & 1. (x) (N_x \supset H_x) \\ & 2. \sim H_m \cdot C_m \quad \therefore (\exists x) (C_x \cdot \sim N_x) \end{aligned}$$

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- (21) 1. $(x) [(Qx \vee Rx) \supset Tx]$
 2. $(x) Qx$ $\therefore (x) Tx$
- (22) 1. $(x) (Jx \vee Kx) \supset Lx$
 2. Ka
 3. $(\exists x) \sim Lx$ $\therefore (\exists x) \sim Jx$
- (23) 1. $(x) [Dx \supset (Hx \cdot \sim Kx)]$
 2. $(x) (Hx \supset Px)$
 3. Dg $\therefore (\exists x) (Px \cdot \sim Kx)$
- (24) 1. $(x) (Mx \supset Sx)$
 2. $(x) (Nx \supset Lx)$
 3. $\sim Sa \cdot Na$ $\therefore \sim Ma \cdot La$
- (25) 1. $(x) (Px \supset Sx)$
 2. $(\exists x) (Px \cdot Lx)$
 3. Pa $\therefore (\exists x) (Sx \cdot Lx)$
- (26) 1. $(x) (Tx \supset Nx)$
 2. $(x) (Nx \supset Mx)$
 3. Td $\therefore Ad \vee Md$
- (27) 1. $(x) [Ax \supset (Rx \vee Tx)]$
 2. $(x) Ax$
 3. $(\exists x) (Sx \cdot \sim Tx)$ $\therefore (\exists x) (Sx \cdot Rx)$
- (28) 1. $(x) [Ax \supset (Bx \supset Fx)]$
 2. $(\exists x) (Ax \cdot Bx)$ $\therefore (\exists x) (Fx)$

- (29) 1. $(x) (Dx \supset \sim Gx)$
2. Db
3. $(\exists x) [Dx \cdot (Gx \vee Kx)] \quad \therefore (\exists x) Kx$

- (30) 1. $(x) (Ax \supset Bx)$
2. $(x) (Bx \supset Cx)$
3. $(x) (Cx \supset Dx) \quad \therefore (x) (\sim Dx \supset \sim Ax)$

- (31) 1. $(x) [Cx \supset (fx \supset Gx)]$
2. $(x) Cx \quad \therefore \sim Ga \supset \sim fa$