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a) $(\forall x \exists y p(x,y) \wedge (\exists y q(y) \rightarrow q(a))) \vee \forall y (\exists y \forall x p(x,y) \vee \exists z p(y,a))$

$(\forall x \exists y p(x,y) \wedge (\neg \exists y q(y) \vee q(a))) \vee \forall y (\exists y \forall x p(x,y) \vee \exists z p(y,a))$

$(\forall x \exists y p(x,y) \wedge (\forall y \neg q(y) \vee q(a))) \vee \forall y (\exists y \forall x p(x,y) \vee \exists z p(y,a))$

$(\forall x \exists y p(x,y) \wedge (\forall w \neg q(w) \vee q(a))) \vee \forall y (\exists y_1 \forall x p(x,y_1) \vee p(y,a))$

$\forall w (\forall x \exists y p(x,y) \wedge (\neg q(w) \vee q(a))) \vee \forall y \exists y_1 \forall x (p(x,y_1) \vee p(y,a))$

$\forall w \forall x \exists y (p(x,y) \wedge (\neg q(w) \vee q(a))) \vee \forall y_2 \exists y_1 \forall x_1 (p(x_1,y_1) \vee p(y_2,a))$

$\forall w \forall x \exists y \forall y_2 \exists y_1 \forall x_1 (((p(x,y) \wedge (\neg q(w) \vee q(a))) \vee (p(x_1,y_1) \vee p(y_2,a)))$

$\forall w \forall x \exists y \forall y_2 \exists y_1 \forall x_1 ((p(x,y) \vee p(x_1,y_1) \vee p(y_2,a)) \wedge (\neg q(w) \vee q(a) \vee p(x_1,y_1) \vee p(y_2,a)))$

(c) $\forall x P(x,y) \rightarrow (\forall y P(y,x) \rightarrow \forall x (q(x) \wedge \exists y \forall z r(a,y,z)))$

$\neg\forall x P(x,y) \vee (\neg\forall y P(y,x) \vee \forall x (q(x) \wedge \exists y \forall z r(a,y,z)))$

$\exists x \neg P(x,y) \vee (\exists y \neg P(y,x) \vee \forall x (q(x) \wedge \exists y \forall z r(a,y,z)))$

$\exists x \neg P(x,y) \vee (\exists y \neg P(y,x) \vee \forall x \exists y \forall z (q(x) \wedge r(a,y,z)))$

$\exists x \neg P(x,y) \vee \exists y (\neg P(y,x) \vee \forall x \forall z (q(x) \wedge r(a,y,z)))$

$\exists x \neg P(x,y) \vee \exists y \forall z (\neg P(y,x) \vee \forall w (q(w) \wedge r(a,y,z)))$

$\exists x \neg P(x,y) \vee \exists y \forall z \forall w (\neg P(y,x) \vee (q(w) \wedge r(a,y,z)))$

$\exists x_1 \neg P(x_1,y) \vee \exists y_1 \forall z \forall w (\neg P(y_1,x) \vee (q(w) \wedge r(a,y_1,z)))$

$\exists x_1 \exists y_1 \forall z \forall w (\neg P(x_1,y) \vee (\neg P(y_1,x) \vee (q(w) \wedge r(a,y_1,z))))$

$\exists x_1 \exists y_1 \forall z \forall w ((\neg P(x_1,y) \vee \neg P(y_1,x) \vee q(w)) \wedge (\neg P(x_1,y) \vee r(a,y_1,z)))$

(f) $\left(\forall w \left(\forall x r(x,w) \rightarrow (\forall x p(x) \rightarrow \exists x (q(x) \vee p(w))\right)\right) \wedge \forall z \left(p(z) \vee \exists z q(z)\right)$

$\left(\forall w \left(\neg \forall x r(x,w) \vee (\neg \forall x p(x) \vee \exists x (q(x) \vee p(w))\right)\right) \wedge \forall z \left(p(z) \vee \exists z q(z)\right)$

$\left(\forall w \left(\exists x \neg r(x,w) \vee (\exists x \neg p(x) \vee \exists x (q(x) \vee p(w))\right)\right) \wedge \forall z \left(p(z) \vee \exists z q(z)\right)$

$\left(\forall w \exists x \left(\neg r(x,w) \vee \neg p(x) \vee q(x) \vee p(w)\right)\right) \wedge \forall z \left(p(z) \vee \exists z_1 q(z_1)\right)$

$\forall w \exists x \left(\neg r(x,w) \vee \neg p(x) \vee q(x) \vee p(w)\right) \wedge \forall z \exists z_1 \left(p(z) \vee q(z_1)\right)$

$\forall w \exists x \forall z \forall z_1 \left(\left(\neg r(x,w) \vee \neg p(x) \vee q(x) \vee p(w)\right) \wedge \left(p(z) \vee q(z_1)\right)\right)$