Question 10

(a) $\forall x F(x, \text{Fred})$

(b) $\forall y F(\text{Evelyn}, y)$

(c) $\forall x \exists y F(x, y)$

(d) $\forall x \exists y \neg F(x, y)$

(e) $\forall x \exists y F(y, x)$

(f) $\neg \forall x (F(x, \text{Fred}) \wedge F(x, \text{Jerry}))$

(g) $\exists x \exists y (F(\text{Nancy}, x) \wedge F(\text{Nancy}, y) \wedge y \neq z \wedge \forall w (F(\text{Nancy}, w) \rightarrow (w = y) \vee (w = z)))$

(h) $\exists y (\forall x F(x, y) \wedge \forall z (\forall w F(w, z)) \rightarrow z = y)$

(i) $\neg \exists x F(x, x)$

(j) $\exists x \exists y (F(x, y) \wedge \forall z (F(x, z) \rightarrow ((z = y) \vee (z = x))))$