Question #12

1. Ex 1.8.2, sections 6-e

B. $\forall x\,(P(x) \vee D(x))$

negation: $\neg \forall x(P(x) \vee D(x))$

de Morgan's Law: $\exists x(\neg P(x) \wedge \neg D(x))$

English: ~~No patient were given the medicatio, or the placebo or both~~

There exists a patient who was not given the placebo and not given the medication

C. $\exists x(D(x) \wedge M(x))$

negation: $\neg \exists x(D(x) \wedge M(x))$

de Morgan's: $\forall x(-D(x) \vee -M(x))$

English: Every patient was not given the medication or did not have migraines

D. $\forall x(P(x) \longrightarrow M(x)$

negate + ~~them~~ de Morgan's: $\neg \forall x(-P(x) \vee M(x))$

$\exists x(P(x) \wedge -M(x))$

translate: There exists a patient who took the placebo and did not have ~~migrand~~ migraines.

E. $\exists x(M(x) \wedge P(x))$

negate: $\neg \exists x(M(x) \wedge P(x))$

de Morgan's: $\forall x(-M(x) \vee -P(x))$

English: ~~There is a patient who~~ Every patient did not have a migraine or was not given the placebo.