Section 1.5, Problem 26: Let $Q(x, y)$ be the statement "$x + y = x - y$". If the domain for both variables consists of all integers, what are the following truth values?

a. $Q(1, 1)$

b. $Q(2, 0)$

c. $\forall y Q\,(1, y)$

d. $\exists x Q(x, 2)$

e. $\exists x \exists y Q(x, y)$

f. $\forall x \exists y Q(x, y)$

g. $\exists y \forall x Q(x, y)$

h. $\forall y \exists x Q(x, y)$

i. $\forall x \forall y Q(x, y)$

Section 1.6, Problem 20: Determine whether these are valid arguments.

a. If x is a positive real number, then x^2 is a positive real number. Therefore if a^2 is positive, where a is a real number, then a is a positive real number.

b. If $x^2 \neq 0$, where x is a real number, then $x \neq 0$. Let a be a real number with $a^2 \neq 0$, then $a \neq 0$.