Questions on Logic

(1) Write the following in quantifier notation

a) Every positive real number is greater than every real negative number

b) The equation $3x+2=5$ has at least one solution

c) The integer n is a "perfect" square. (e.g. $1, 4, 9, 16, 25, 36$, etc...)

d) For any two natural numbers $m > n$ there is a quotient q and a remainder r such that $m = nq + r$. (division identity)

(2) Which of these is true or false for all $x \in \mathbb{R}$?

a) $x^2 = 4 \Rightarrow x = 2 \vee x = -2$

b) $x = 4 \Rightarrow x^2 = 16$

c) $x^2 = 25 \Rightarrow x = -5$

d) $x^2 - 5x + 6 = 0 \Rightarrow x = 3 \vee x = 2$

e) $x = 1 \Leftrightarrow x = -1$

f) $x \neq 1 \Leftrightarrow x^2 \neq 1$

g) $x^2 + 4x + 4 = 0 \Leftrightarrow x = -2$

h) $2x = 5 \Leftrightarrow 2x + 3 = 0$

Write contrapositive of the above statements.