1. False. It does not pass the vertical line test.
2. False. Natural numbers do not include negative integers.
3. (a) $(f+g)(x) = \sqrt{1-x^2} + \sqrt{1+x}$. Since there is no cancellation here, the domain is $\{x \in \mathbb{R} \mid 1-x^2 \geq 0 \text{ and } 1+x \geq 0\}$, since the inside of the square roots must be nonnegative (greater than or equal to 0).

   $1-x^2 \geq 0$ when $1 \geq x^2$, which is the same as $-1 \leq x \leq 1$. Similarly, $1+x \geq 0$ when $x \geq -1$. Putting these constraints together, we can rewrite the domain as $-1 \leq x \leq 1$, or $[-1, 1]$.

   (b) $(f \cdot g)(x) = \sqrt{(1+x)(1-x)}\sqrt{1+x} = (1+x)\sqrt{1-x}$. The domain of this function is $\{x \in \mathbb{R} \mid 1-x \geq 0\}$.

   $1-x \geq 0$ when $1 \geq x$. Another way to write this set is $(-\infty, 1]$.

   There was some confusion about the notation. If you interpreted $(f \cdot g)(x)$ as $(f \circ g)(x)$, then the solution is $(f \circ g)(x) = \sqrt{1 - \sqrt{1+x}^2} = \sqrt{1-(1+x)} = \sqrt{-x}$. The domain of this function is $\{x \in \mathbb{R} \mid -x \geq 0\}$, or $\{x \in \mathbb{R} \mid x \leq 0\}$, or $(-\infty, 0]$. (I also accepted this solution if you interpreted it this way.)