Name ______Solutions____ Discrete I, Quiz 6

1) Find the negation of $\forall_{x\in U}\exists_{y\in U}(p\wedge q)$

$$\neg\left(\forall_{x\in U}\exists_{y\in U}(p\wedge q)\right)\Leftrightarrow\exists_{x\in U}\forall_{y\in U}(\neg p\vee\neg q)$$

2) Prove that 17 is odd.

Recall that a number, say x, is odd iff it can be written as $x=2k+1$ for some integer k.

$$17=2\cdot 8+1$$

3) Prove that the product of any two even numbers is even.

Let x and y be arbitrary even numbers. Then there are some integers k_1 and k_2 such that:

$$x=2k_1$$
$$y=2k_2$$

Multiplying these we see that xy is even:

$$xy=2k_1\cdot 2k_2=2\cdot(2k_2k_2)$$