Translate the following

Quantifiers

1. Every student is majoring in math or computer science
S(x) M CS

$\equiv \forall x \left[S(x) \longrightarrow (M(x) \vee CS(x)) \right]$

2. For all real x, y, $x \geq y$ if $x^2 > y^2$.

$\equiv \forall x \in \mathbb{R}, \forall y \in \mathbb{R} \left[(x^2 > y^2) \longrightarrow (x > y) \right]$

Negate: ① $\exists x \ (P(x) \wedge Q(x)) \overset{\text{answer}}{\equiv} \forall x \ (\neg P(x) \vee \neg Q(x))$

② $\forall x \ (P(x) \longrightarrow Q(x)) \overset{\text{answer}}{\equiv} \exists x \ (P(x) \wedge \sim Q(x))$

$\sim p \vee q$

ex: $\forall x \ \ x \in \mathbb{Z} \longrightarrow 2\mathbb{Z}$ is even

negation $\exists x \ \ x \in \mathbb{Z} \longrightarrow 2\mathbb{Z}$ is not even.

③ $\forall x \in \mathbb{Z}^+, \ x > 3 \longrightarrow$ Work
False stat.
So it's negation is true.

negation $\exists x \in \mathbb{Z}^+ ; \ x \leq 3$ $x \not> 3$

④ Someone (x) in our class (D) is taller than 7 feet. P(x)

$\exists x \in D, \ P(x)$

negation: $\sim(\exists x \in D, P(x)) \equiv \forall x \in D, \sim P(x)$

↓

Everybody in our class is shorter than 7 feet.

Try: There is a student in C- university who has studied discrete mathematics. $\exists x : P(x)$

Negation: Every studnt in C- univerty who has not Studied discrete mathematics. $\forall x : \sim P(x)$