If you are TEXing, the symbol " **.** " can be made by adding the command "`\newcommand{\st}{\,\hbox{\Huge .}\,}`" to the preamble and then called by "`\st`" when in math mode.

(10 pts)

(1) For each of the following propositions, write the negation without using $\neg$

(a) [+2] $\forall x \in \mathbb{Z} \,\mathbf{.}\, \exists y \in \mathbb{Z} \,\mathbf{.}\, x = 2y$

(b) [+2] $\exists y \in \mathbb{R} \,\mathbf{.}\, \forall x \in \mathbb{R} \,\mathbf{.}\, y > x$

(c) [+2] $\forall \epsilon > 0 \,\mathbf{.}\, \exists \delta > 0 \,\mathbf{.}\, (|x - x_0| < \delta) \Rightarrow (|y - y_0| < \epsilon)$

(2) Write the contrapositive of the following statements.

(a) [+2] For integers x, y, z, if x divides y and x divides z, then x divides $y + z$.

(b) [+2] For real numbers x, y, whenever $x \geq y$, it must be the case that $x^2 \geq y^2$.