1) Determine whether the following statement is true or false. Provide a brief explanation.

\[ \forall x \in \mathbb{R} (x^3 \geq 0) \]

This is false. We see in particular that it is not true for \( x = -2 \):

\[ (-2)^3 = -8 \not\geq 0 \]

2) Determine whether the following statement is true or false. Provide a brief explanation.

\[ \exists x, y \in \mathbb{R} (x = y + 2) \]

This is true. We see in particular that such as \( x \) and \( y \) are \( x = 3, y = 1 \):

\[ 3 = 1 + 2 \]