2.

$$\left[\begin{array}{ccc|c} 1 & 2 & 1 & 1 \\ 2 & 1 & 3 & 1 \\ 1 & -1 & h & 3 \end{array}\right] \overset{-2\cdot R_1+R_2}{\Longleftrightarrow} \left[\begin{array}{ccc|c} 1 & 2 & 1 & 1 \\ 0 & -3 & 1 & 1 \\ 1 & -1 & h & 3 \end{array}\right]$$

$$\overset{-R_1+R_3}{\Longleftrightarrow} \left[\begin{array}{ccc|c} 1 & 2 & 1 & 1 \\ 0 & -3 & 1 & -1 \\ 0 & -3 & h-1 & 2 \end{array}\right] \overset{-R_2+R_3}{\Longleftrightarrow} \left[\begin{array}{ccc|c} 1 & 2 & 1 & 1 \\ 0 & -3 & 1 & -1 \\ 0 & 0 & h-2 & 3 \end{array}\right]$$

So, the system is consistent when $h - 2 \neq 0 \iff \boxed{h \neq 2}$.

3.

To determine if the system $Ax = b$ is consisten for every $b \in \mathbb{R}^3$ we need to determine of the columns of A are linearly independent or the determinant is nonzero.

$$det(A) = \begin{vmatrix} -2 & 1 & 1 \\ 1 & -2 & 1 \\ 1 & 1 & -2 \end{vmatrix} = (-2)^3 + 1 + 1 - (-2) - (-2) - (-2) = -8 + 2 + 2 + 2 + 2 = 0$$

So, the system is not consistent for every vector b.