1. The set of points satisfying $2x_1 + 3x_2 \leq 6$ is Convex halfspace since it is of the form $\bar{\mathbf{a}}^T\bar{\mathbf{x}} \leq b$.
   Ans c
2. The ellipsoid model can be used to represent the region in which true channel vector lies for a scenario with channel state information (CSI) uncertainty

   Ans b

3. A hyperplane can be expressed as $\bar{\mathbf{a}}^T\,\bar{\mathbf{x}} = b$
   Ans a
4. A convex ellipsoid can be expressed as
   $$\{\bar{\mathbf{x}}_c + \mathbf{A}\bar{\mathbf{u}} \mid \|\bar{\mathbf{u}}\| \leq 1\}$$
   Ans c
5. A halfspace can be expressed as $\bar{\mathbf{a}}^T\,\bar{\mathbf{x}} \geq b$
   Ans b
6. The halfspace can be used to model the set of feasible powers of users in a wireless system
   Ans a
7. The set $\left\|\begin{bmatrix}1 & 1\\ 2 & 3\end{bmatrix}\begin{bmatrix}x_1\\ x_2\end{bmatrix}\right\| \leq 4x_1 + 5x_2$ is of the form $\|\mathbf{P}\bar{\mathbf{x}}\| \leq \mathbf{c}^T\bar{\mathbf{x}}$. Hence, it represents a Convex cone
   Ans c
8. Given a vector $\bar{\mathbf{x}}$, its l_1 and l_2 norms satisfy the property $\|\bar{\mathbf{x}}\|_1 \leq \sqrt{n}\|\bar{\mathbf{x}}\|_2$
   Ans c
9. The convex hull of a set S is the set of all convex combinations of points in S
   Ans c
10. The set $S = \left\{\begin{bmatrix}3\\ 2\end{bmatrix} + \begin{bmatrix}1 & 1\\ 2 & 3\end{bmatrix}\bar{\mathbf{u}} \,\middle|\, \|\bar{\mathbf{u}}\| \leq 1\right\}$ is of the form
    $$\{\bar{\mathbf{x}}_c + \mathbf{A}\bar{\mathbf{u}} \| \|\bar{\mathbf{u}}\| \leq 1\}$$
    Hence, it represents an ellipsoid
    Ans d