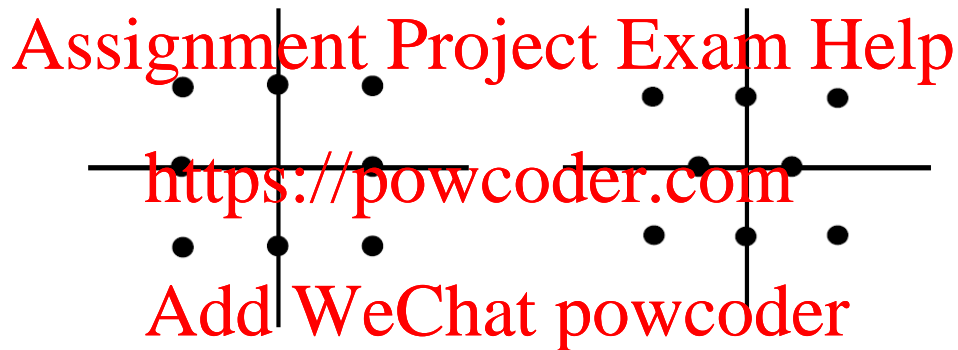


1. Suppose the bit rate in a wireless communication system is 10 Mbps. What is the symbol rate if the modulation scheme is:
  - (a) BPSK
  - (b) QPSK
  - (c) 16-PSK
  - (d) 64-QAM
  
2. Consider the two 8-point QAM signal constellations shown below. The minimum distance between adjacent points is  $2\sqrt{\mathcal{E}_g}$ .



- (a) What is the average energy per symbol for each constellation assuming that the signal points are equally probable?
- (b) Which constellation is more energy efficient?