Dot product problems

1. a) Compute \((1, 2, -4) \cdot (2, 3, 5)\).
   b) Is the angle between these two vectors acute, obtuse or right?

2. Suppose \(\mathbf{B} = (2, 2, 1)\). Suppose also that \(\mathbf{B}\) makes an angle of 30\(^\circ\) with \(\mathbf{A}\) and \(\mathbf{A} \cdot \mathbf{B} = 6\). Find \(|\mathbf{A}|\).

3. If \(\mathbf{A} \cdot \mathbf{B} = 0\) what is the angle between \(\mathbf{A}\) and \(\mathbf{B}\)?
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