5.7 Component Vectors

1. Answers:
   a. $2\vec{b} = 2\langle 5,4\rangle = \langle 10,8\rangle = 10\hat{i} + 8\hat{j}$
   b. $-\frac{1}{2}\vec{c} = -\frac{1}{2}\langle -3,7\rangle = \langle 1.5,-3.5\rangle = 1.5\hat{i} - 3.5\hat{j}$
   c. $0.6\vec{b} = 0.6\langle 5,4\rangle = \langle 3,2.4\rangle = 3\hat{i} + 2.4\hat{j}$
   d. $-3\vec{b} = -3\langle 5,4\rangle = \langle -15,-12\rangle = -15\hat{i} - 12\hat{j}$
2. All of these need to be translated to (0,0). Also, recall that magnitudes are always positive.
   - (a) $(-3,8) + (3,-8) = (0,0)$ $(2,-1) + (3,-8) = (5,-9)$

   horizontal = 5, vertical = 9
   - (b) $(7,13) + (-7,-13) = (0,0)$ $(11,19) + (-7,-13) = (4,6)$

   horizontal = 4, vertical = 6
   - (c) $(4.2,-6.8) + (-4.2,6.8) = (0,0)$ $(-1.3,-9.4) + (-4.2,6.8) = (-5.5,-2.6)$

   horizontal = 5.5, vertical = 2.6