Phys 111
Homework

Ch6-49

$\vec{A} = 3\hat{x} + 2\hat{y}, \quad |\vec{A}| = \sqrt{13}$

$\vec{B} = -\hat{x} + 6\hat{y}, \quad |\vec{B}| = \sqrt{37}$

$\vec{C} = 7\hat{x} - 2\hat{y}, \quad |\vec{C}| = \sqrt{53}$

$\vec{A} \cdot \vec{B} = (3)(-1) + (2)(6) = 9$

$\vec{A} \cdot \vec{C} = (3)(7) + (2)(-2) = 17$

$\vec{B} \cdot \vec{C} = (-1)(7) + (6)(-2) = -19$

$\theta_{AB} = \cos^{-1}\left(\frac{9}{\sqrt{13 \cdot 37}}\right) = 66°$

$\theta_{AC} = \cos^{-1}\left(\frac{17}{\sqrt{13 \cdot 53}}\right) = 50°$

$\theta_{BC} = \cos^{-1}\left(\frac{-19}{\sqrt{53\,37}}\right) = 115°$