Given $\vec{u} = \langle 1, 2 \rangle$ and $\vec{v} = \langle 3, -2 \rangle$ answer questions 1-3.

1. Find the magnitude of the vector $\vec{v}$ (2pt)

2. Find the direction angle of the vector $\vec{v}$ (3pt)

3. Find $2\vec{v} - 3\vec{u}$ Write your answer as a linear combination of the standard vectors $\vec{i} = \langle 1, 0 \rangle$, $\vec{j} = \langle 0, 1 \rangle$. (3pt)

4. If a vector $\vec{a}$ has magnitude 20 and direction angle of $\theta = \frac{5\pi}{3}$.
Give the exact value of the vertical component (the $\vec{j}$ component). (3pt)

Bonus If a baseball bat and ball cost a total of $1.10 and the bat costs $1 more than the ball, how much does each cost?