Key for Spring 2013: Problem 1 from Final A for 2:30 Class

Assume capital markets are perfect and that Gnusmas and Elppa have identical assets. Gnusmas' outstanding equity has a market value of $100 million and has debt that matures for $200 million seven years from today. These bonds earn an interest rate of 8% per year. Eppla has no debt and its equity has a market value of $200 million. What set of transactions will generate an arbitrage profit today? Show that the conditions of arbitrage are met if the firm’s value ends up at $175 or $250 million seven years from today. Note: calculations required.

\[
\sqrt{b} = 100 + \frac{200}{(1.08)^7} = 100 + 116.70 = 216.70 > 200
\]

\[
\text{sell short} \quad \text{buy}
\]

\[
\Rightarrow \text{buy Elppa's stock} + \text{short-sell Gnusmas' stock + bonds} = \frac{175}{250}
\]

\[
\begin{array}{c|c|c}
\text{Trans} & \text{S} & \text{E} \\
\hline
+5\text{ Buy Elppa's Stock} & -200 & +175 \\
+5\text{ Short-sell Gnusmas' bonds} & +116.70 & -175 \\
+5\text{ Short-sell Gnusmas' stock} & +100 & 0 \\
\hline
\text{Total} & +16.70 & \$(50)
\end{array}
\]