Def. For $r \in \mathbb{R}$ and $B \subseteq \mathbb{R}$, define $rB := \{rb \colon b \in B\}$.
In class and on pervious HW, we showed the following two theorems.
Thm 1. Let T be a nonempty bounded subset of $\mathbb{R}$. Let $p > 0$. Then $\sup(pT) = p \sup T$.
Thm 2. Let T be a nonempty bounded subset of $\mathbb{R}$. Let $p > 0$. Then $\inf(pT) = p \inf T$.
Thm 3. Let T be a nonempty bounded subset of $\mathbb{R}$. Then $\sup(-T) = -\inf T$.

Variant of book's ER 2.4.4b

§2.4
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Thm 4. Let T be a nonempty bounded subset of $\mathbb{R}$. Let $n < 0$. Then $\sup(nT) = n \inf T$.

Thm 5. Let T be a nonempty bounded subset of $\mathbb{R}$. Let $n < 0$. Then $\inf(nT) = n \sup T$.

1. Give a (short) proof of Thm 4 by using (some of): Thm 1, Thm 2, Thm 3.

2. Give a (short) proof of Thm 5 by using (some of): Thm 1, Thm 2, Thm 3, Thm 4.

►. HINT: $nT = (-n)(-T)$.

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