Remember that the important part of all these problems is the explanation of your answer, not your answer itself. You will not receive anywhere near full credit for a correct answer unless you explain why your answer is correct.

1. Let $T_1, T_2 : \mathbb{R} \to \mathbb{R}$ be translations by arbitrary directed line segments $\vec{s}_1, \vec{s}_2$ in $\mathbb{R}$.
   (a) What function is $T_2 T_1$? (You should be able to express this as a single familiar function, rather than the composition of two functions.)
   (b) What function is $T_1 T_2$? (You should be able to express this as a single familiar function, rather than the composition of two functions.)

2. Let $F_1, F_2 : \mathbb{R} \to \mathbb{R}$ be reflections across arbitrary points $p_1, p_2$ in $\mathbb{R}$.
   (a) What function is $F_2 F_1$? (You should be able to express this as a single familiar function, rather than the composition of two functions.)
   (b) What function is $F_1 F_2$? (You should be able to express this as a single familiar function, rather than the composition of two functions.)

3. Let $F : \mathbb{R} \to \mathbb{R}$ be the reflection across an arbitrary point $p$ in $\mathbb{R}$, and let $T : \mathbb{R} \to \mathbb{R}$ be translation by an arbitrary directed line segment $\vec{s}$ in $\mathbb{R}$.
   (a) What function is $T F$? (You should be able to express this as a single familiar function, rather than the composition of two functions.)
   (b) What function is $F T$? (You should be able to express this as a single familiar function, rather than the composition of two functions.)