Inverse of Transpose is Transpose of Inverse

• for square matrix $A$ with inverse $A^{-1}$, following equalities hold:
  
  $$A^{-1}A = I$$
  $$\left(A^{-1}A\right)' = I' = I$$
  $$\left(A'\right)(A^{-1})' = I$$

• last equality says that the inverse of $(A')$ is $(A^{-1})'$

• hence
  
  $$\left(A'\right)^{-1} = (A^{-1})',$$
  
  which says that operations of inverse and transpose commute
  (this result is evoked on overhead II–49)