



Figure 4.3. The residence time (τ) of CO_2 with respect to hydration and reaction with OH^- as a function of pH. The curves were determined from exponent A in Eq. (4.30) and the rate constants in Table 4.6. The residence times with respect to the two separate reactions are presented separately and together. CO_2 hydration is indicated by k_{CO_2} and calculated for the case where $k_{OH} = k_{HCO_3} = 0$. Hydroxylation is indicated by k_{OH} and calculated for the case where $k_{CO_2} = k_{CO_2}r = 0$. Together the reactions are indicated by $(k_{CO_2} + k_{OH})$. In the pH range of seawater both reactions are important in determining the reaction residence time.