Semimartingale| Consider the drawdown process $X_t = W_t^* - W_t$ where W_t is a standard Brownian motion and $W_t^* = \sup_{s \leq t} W_s$ is the running supremum. Then X is a semimartingale. In particular, X is a submartingale as $A_t = W_t^*$ is an increasing process.

Theorem 0.0.1.