

**A.8** For  $\gamma$  we have by definition

$$\begin{aligned}\gamma &= C''(S) = \Delta'(S) \\ &= \frac{d\Phi(d_+(S))}{dS}.\end{aligned}$$

By virtue of the chain rule we then have

$$\gamma = \Phi'(d_+(S))d'_+(S) = \frac{\phi(d_+)}{\sigma\sqrt{\tau}S}.$$