## ■ Prove the following

[A] $|a\,b| = |a||b|$

[B] $\frac{a}{b} = \frac{|a|}{|b|}$

[1] $|x| < |y| \Longleftrightarrow x^2 < y^2$

[2] $\big||x| - |y|\big| \leq |x + y|$

[3] $\big||x| - |y|\big| \leq |x - y|$

[4] $|x - y| \leq |x - z| + |z - y|$

[5] $|x + y| + |x - y| \geq |x| + |y|$

[6] $a^2 + b^2 + c^2 \geq a\,b + b\,c + a\,c$

[7] $x^2 + 4\,y^2 + 1 \geq 2\,x\,y + x + 2\,y$

[8] $(a^2 + b^2)\,(c^2 + d^2) \geq (a\,c + b\,d)^2$

## ■ Proofs