

1. ASSIGNMENT: ABSOLUTE VALUES

For $a \in \mathbb{R}$ the *positive part* is defined by

$$a^+ := \frac{|a| + a}{2}$$

and the *negative part* by

$$a^- := \frac{|a| - a}{2}$$

a) Prove that $a = a^+ - a^-$ and $|a| = a^+ + a^-$.

b) Prove that

$$a^+ = \begin{cases} a & a \geq 0 \\ 0 & a \leq 0 \end{cases} \quad \text{and} \quad a^- = \begin{cases} 0 & a \geq 0 \\ -a & a \leq 0 \end{cases}$$