**abs() — Absolute value (length)**

### Description

For \( Z \) real, \( \text{abs}(Z) \) returns the elementwise absolute values of \( Z \).

For \( Z \) complex, \( \text{abs}(Z) \) returns the elementwise length of each element. If \( Z = a + bi \), returned is \( \sqrt{a^2 + b^2} \), although the calculation is not made in that way. The method actually used prevents overflow.

### Syntax

\[
\text{real matrix \hspace{1em} abs(numeric matrix } Z\text{)}
\]

### Conformability

\[
\text{abs}(Z): \\
Z: \quad r \times c \\
\text{result}: \quad r \times c
\]

### Diagnostics

\( \text{abs(.) returns . (missing)} \).

### Also see

[M-4] **Scalar** — Scalar mathematical functions