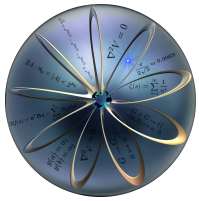

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exact functor

Canonical name	ExactFunctor
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Synonym	left exact functor
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Related topic	CategoricalDiagramsAsFunctors

A covariant functor F is said to be *left exact* if whenever

$$0 \to A \xrightarrow{\alpha} B \xrightarrow{\beta} C$$

is an exact sequence, then

$$0 \to FA \xrightarrow{F\alpha} FB \xrightarrow{F\beta} FC$$

is also an exact sequence.

A covariant functor F is said to be *right exact* if whenever

$$A \xrightarrow{\alpha} B \xrightarrow{\beta} C \to 0$$

is an exact sequence, then

$$FA \xrightarrow{F\alpha} FB \xrightarrow{F\beta} FC \to 0$$

is also an exact sequence.

A contravariant functor F is said to be *left exact* if whenever

$$A \xrightarrow{\alpha} B \xrightarrow{\beta} C \to 0$$

is an exact sequence, then

$$0 \to FC \xrightarrow{F\beta} FB \xrightarrow{F\alpha} FA$$

is also an exact sequence.

A contravariant functor F is said to be *right exact* if whenever

$$0 \to A \xrightarrow{\alpha} B \xrightarrow{\beta} C$$

is an exact sequence, then

$$FC \xrightarrow{F\beta} FB \xrightarrow{F\alpha} FA \to 0$$

is also an exact sequence.

A (covariant or contravariant) functor is said to be *exact* if it is both left exact and right exact.