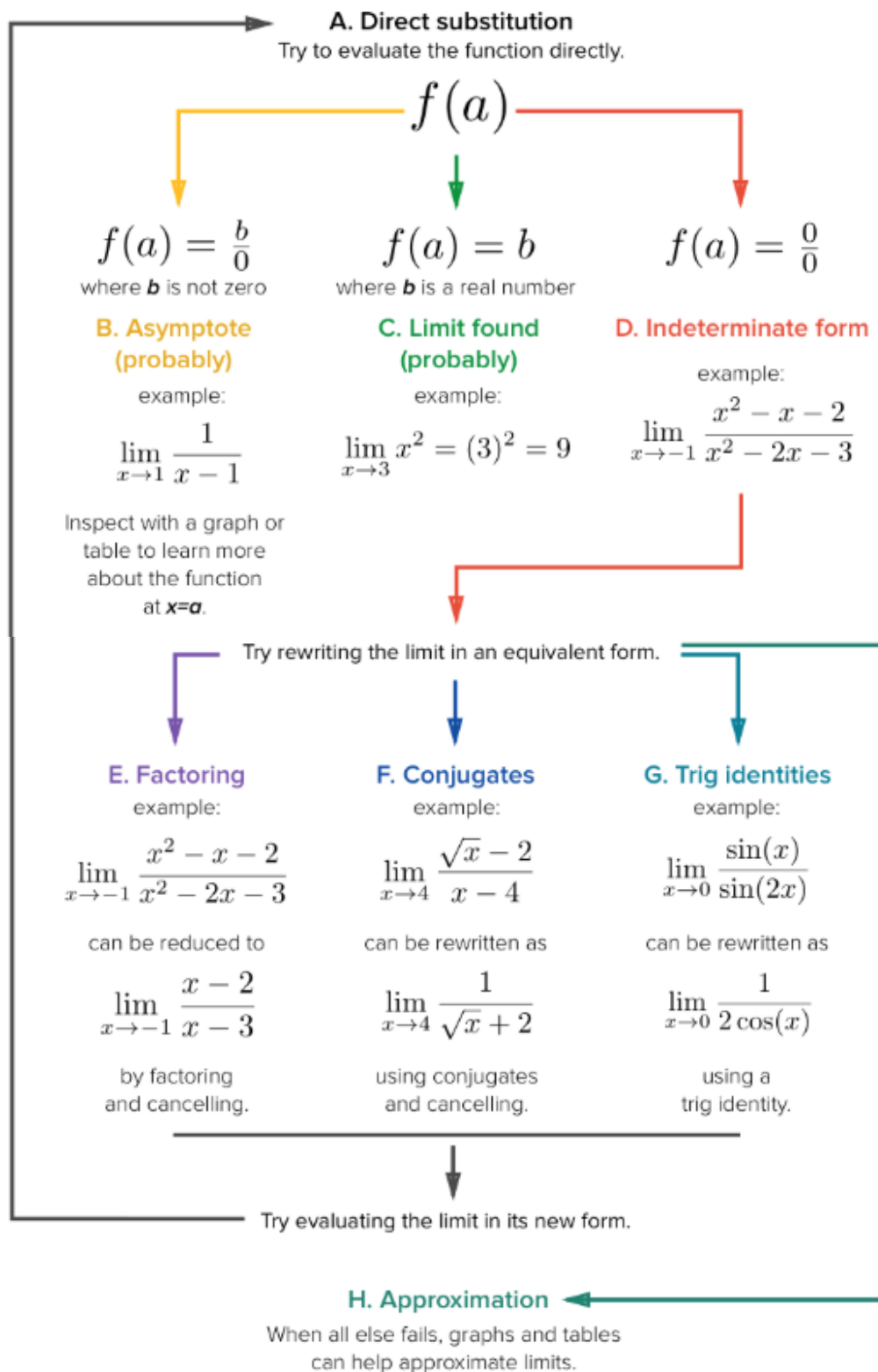


# Calculating $\lim_{x \rightarrow a} f(x)$



**Key point #2:** There's a big difference between getting  $b/0$  and  $0/0$  (where  $b \neq 0$ ). When you get  $b/0$ , that indicates that the limit doesn't exist and is probably unbounded (an asymptote). In contrast, when you get  $0/0$ , that indicates that you don't have enough information to determine whether or not the limit exists, which is why it's called the *indeterminate form*. If you wind up here, you've got more work to do, which is where the bottom half of the flow chart comes into play.

**Key point #1:** Direct substitution is the go-to method. Use other methods only when this fails, otherwise you're probably doing more work than you need to be. For example, it would be extra work to factor an expression into a simpler form if direct substitution would have worked without the factoring.

*Note: There's a powerful method for finding limits called l'Hôpital's rule, which you'll learn later on. It's not covered here because we haven't learned about derivatives yet.*