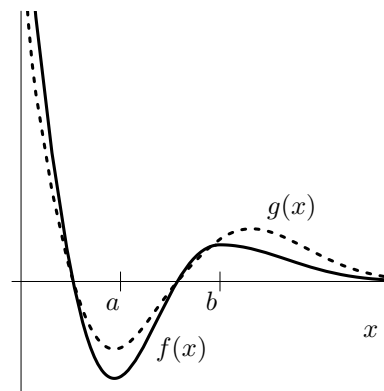


6. [12 points] Consider the graphs of $f(x)$ (the solid curve) and $g(x)$ (the dashed curve) in the figure to the right. Suppose that $\int_0^a f(x) dx$ converges, and that $\int_b^\infty f(x) dx$ diverges. Assume that the behavior suggested as $x \rightarrow 0$ and $x \rightarrow \infty$ continues for that part of the range $0 \leq x < \infty$ not shown in the graph.



For each of the following indicate what this graph suggests about the convergence of the indicated integral. Circle one answer only for each part. No explanation is necessary.

(a) [2 points of 12] $\int_0^b g(x) dx$

converges diverges its convergence cannot be determined

(b) [2 points of 12] $\int_a^\infty g(x) dx$

converges diverges its convergence cannot be determined

(c) [2 points of 12] $\int_0^\infty g(x) dx$

converges diverges its convergence cannot be determined

(d) [2 points of 12] $\int_a^b g(x) dx$

converges diverges its convergence cannot be determined

(e) [2 points of 12] $\int_0^\infty (f(x) + g(x)) dx$

converges diverges its convergence cannot be determined

(f) [2 points of 12] $\int_0^\infty (f(x) - g(x)) dx$

converges diverges its convergence cannot be determined