Partial Product Gransbury

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Problem 1. For partial products of the form $1 + \frac{f(n)}{g(n)}$, I found two patterns, one for convergence and one for divergence. When $f(n)$ is polynomial with a higher degree than $g(n)$ the product will diverge to positive infinity. When the degree of $f(n)$ and $g(n)$ differs by at least 2, with $g(n)$ being the polynomial with the highest degree, the product converges.

For partial products of the form $1 + b^n$, I found two patterns, one for convergence and one for divergence. When b is a number less than one, the product will converge. When b is equal to or greater than one, the product diverges.