10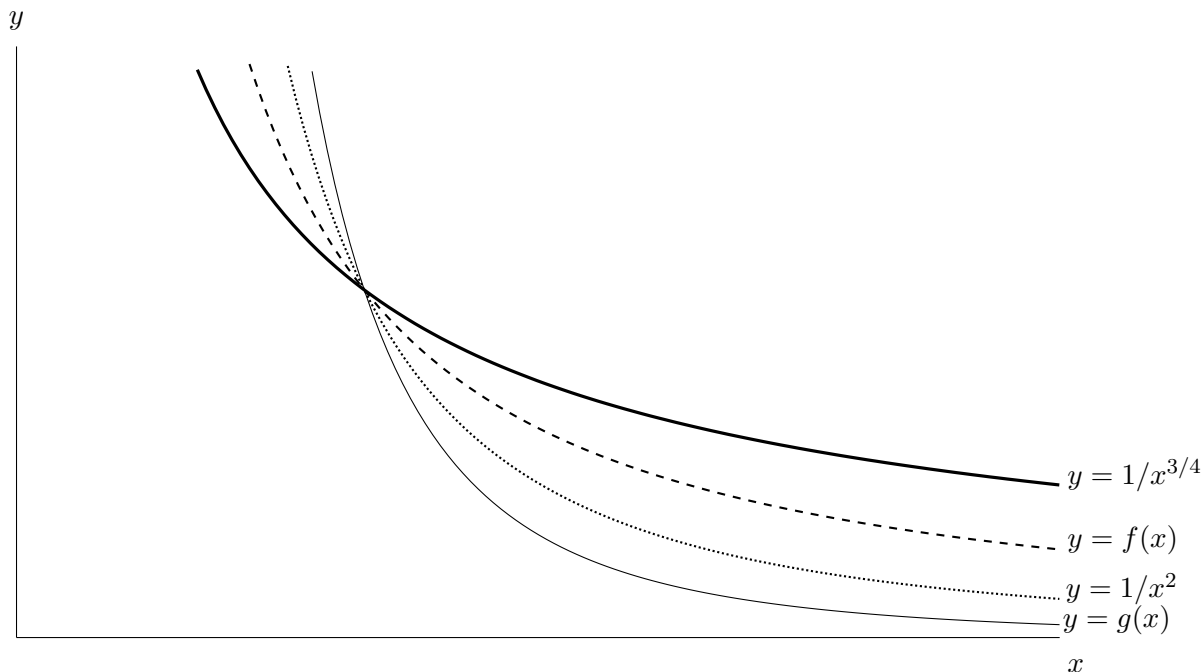. [15 points] Consider the graph below depicting four functions for $x > 0$. The only point of intersection between any two of the functions is at $x = 1$. The functions $f(x)$ and $g(x)$ are both differentiable, and they each have $y = 0$ as a horizontal asymptote and $x = 0$ as a vertical asymptote.

Use the graph to determine whether the following quantities converge or diverge, and circle the appropriate answer. If there is not enough information to determine convergence or divergence, circle "not enough information". You do not need to show your work.

a. [3 points] $\displaystyle\int_1^\infty f(x)\,dx$

> CONVERGES   DIVERGES   NOT ENOUGH INFORMATION

b. [3 points] $\displaystyle\int_0^1 g(x)\,dx$

> CONVERGES   DIVERGES   NOT ENOUGH INFORMATION

c. [3 points] $\displaystyle\int_0^1 g'(x)\,e^{-g(x)}\,dx$

> CONVERGES   DIVERGES   NOT ENOUGH INFORMATION

d. [3 points] $\displaystyle\int_1^\infty \sqrt{g(x)}\,dx$

> CONVERGES   DIVERGES   NOT ENOUGH INFORMATION

e. [3 points] The volume of the solid formed by rotating the region between $f(x)$ and the x-axis from $x = 1$ to $x = \infty$ about the x-axis

> CONVERGES   DIVERGES   NOT ENOUGH INFORMATION