Problem:

Examine the improper integral of the unbounded function for convergence:

$$\int_0^8 \frac{dx}{2x^3+5\sqrt{x}}.$$

Solution:

$$\int_0^8 \frac{dx}{2x^3+5\sqrt{x}} = \int_0^{2\sqrt{2}} \frac{2ydy}{2y^6+5y} = \int_0^{2\sqrt{2}} \frac{2dy}{2y^5+5}, \qquad \boxed{\begin{matrix} x=y^2 \\ dx=2ydy \end{matrix}} \Rightarrow \left|\frac{2}{2y^5+5}\right| \le \frac{2}{5}, \quad \int_0^{2\sqrt{2}} \frac{2}{5}dy \text{ converges,}$$

which means the original integral converges, moreover, it absolutely converges.

Answer: the integral converges.