1. What is an improper integral and how to we handle them?

2. Evaluate each improper integrals below or state that it diverges.

   (a) $\displaystyle\int_1^\infty \frac{1}{x}\,dx$

   (b) $\displaystyle\int_1^\infty \frac{1}{x^2}\,dx$

3. Use the integrals above to decide if the integrals below converge or diverge. Write a complete sentence explaining your reasoning.

   (a) $\displaystyle\int_1^\infty \frac{10}{\sqrt{x}}\,dx$

   (b) $\displaystyle\int_1^\infty \frac{1}{x^2 + 20x}\,dx$

4. Evaluate each improper integrals below or state that it diverges.

(a) $\displaystyle\int_3^9 \frac{dx}{(3-x)^2}$

(b) $\displaystyle\int_0^6 \frac{1}{\sqrt{6-x}}\, dx$

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