Determine whether or not the integral converges. If it does, try to find its value (you may not be able to do this in some cases).

1. \( \int_{2}^{\infty} \frac{dx}{x(\ln x)^2} = \)

2. \( \int_{1}^{10} \frac{dx}{x \sqrt{\ln x}} = \)

3. \( \int_{\frac{1}{5}}^{\infty} \frac{\ln(5x)}{x^2} \, dx = \)

4. \( \int_{-\infty}^{\infty} \frac{dx}{(1 + x^2)^{3/2}} = \)

5. \( \int_{0}^{\pi/2} \frac{dx}{1 - \cos x} = \)

6. \( \int_{0}^{1} \frac{dx}{(1 - x)^{3/2}} = \)

7. \( \int_{0}^{1/2} \frac{dx}{\sqrt{\pi(1 - x)}} = \)

8. Find the area under the curve \( y = (x^2 - x)^{-1} \), above the x-axis and to the right of the line \( x = 2 \).