Instructions: Write your complete solutions on your answer paper. Do not write on this paper. This is a closed-book test. No calculators are allowed to be used. You are not required to simplify your answers.

The following items are of equal weight.

1. \[ \int \frac{\sqrt{1 + \ln x}}{x} \, dx \]

2. \[ \int \frac{\sqrt{x - 1}}{x} \, dx \]

3. \[ \int \frac{1}{x \sqrt{a^2 - x^2}} \, dx \]

4. \[ \int \frac{6}{\sqrt{4 + 2x - x^2}} \, dx \]

5. \[ \int \frac{1}{x^2 \sqrt{a^2 + x^2}} \, dx \]

6. \[ \int \frac{1}{(x^2 + 1)^2} \, dx \]

7. \[ \int \frac{x^2}{(x + 1)^2(x - 2)} \, dx \]

8. \[ \int x \tan^2 x \, dx \]