Name: _____

Math 152 * Enrichment Session 2

1. [15 points] Evaluate. Show all reasoning.

   (a) $\int_0^1 \frac{dx}{(1+\sqrt{x})^5}$

   (b) $\int_3^8 x\sqrt{1+x}\,dx$

   (c) $\int \frac{dx}{x \ln x \ln(\ln x)}$

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2. [3 points] Let R be the region in the xy-plane bounded by the curves

$$x = 1 - y^2 \text{ and } x = y^4 - 1$$

Set up, but do not evaluate, an integral in terms of a single variable that represents the area of R. Justify your answer by drawing a picture.

3. [3 points] Set up two distinct integrals, each in terms of a single variable, representing the area of the region R enclosed by the curves $y = \sqrt{x}$ and $y = x^{1/3}$ in the first quadrant. Justify your answer by drawing a picture.

4. [3 points] Set up, but do not evaluate, an integral in terms of a single variable representing the area of the region bounded by the curves $y = 5 - x^2$ and $y = x^2 + 3x + 3$. As justification, draw a picture.

5. [3 points] Set up two distinct integrals, each in terms of a single variable, representing the area of the region R enclosed by the curves $y = \sqrt{x}$ and $y = x^3$ in the first quadrant. Justify your answer by drawing a picture.