

YOUR NAME: _____

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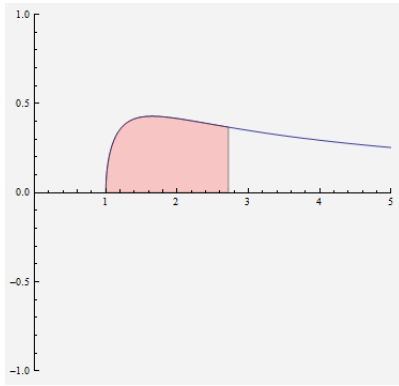
Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. A Porsche 997 Turbo Cabriolet[®] can accelerate from a standing start to a speed of $v(t) = -\frac{1}{4}t^2 + 18t$ feet per second after t seconds, for $0 \leq t < 20$. What distance will the Porsche travel in the first 10 seconds after starting?



2. The marriage rate in the United States has been declining recently, with about $2e^{-(1/30)t}$ million marriages per year, where t is the number of years since 2008. If the given rate continues, what is the total number of marriages performed in the U.S. from 2008 to 2018?

3. Find the area under the curve $f(x) = \frac{\sqrt{\ln x}}{x}$ between $x = 1$ and $x = e$.



4. Compute the indefinite integral $\int x e^{-7x} dx$.

5. Find the area bounded by the the curves $y = 4x^3 + 3$ and $y = 4x + 3$.

