

Name \_\_\_\_\_

- You have 15 minutes
- No calculators
- Show sufficient work

1. (3 points) Suppose  $w(x) = \int_{10}^{x^2} (t - 4)(t + 1)^6 dt$ . Determine all intervals upon which the function  $w(x)$  is increasing.

2. (2 points) Precisely state *The Mean Value Theorem*.

3. (3 points) Evaluate the following definite integral.

$$\int_0^1 \frac{6x + 3}{x^2 + x + 5} dx$$

4. (2 points) Set up, but do not evaluate, one or more integrals which represent the area of the finite region bounded by the curves  $y = x - 1$  and  $x = 7 - y^2$ .