

Name _____

- You have 20 minutes
- No calculators
- Show sufficient work

1. (2 points) Let $g(x) = \int_{-4}^{x^2} f(t) dt$. Determine the equation for the line tangent to the graph of $g(x)$ at $x = 2$ given the following information about f .

- f is continuous on the interval $(-\infty, \infty)$
- f is an odd function
- $f(4) = 20$

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

3. (4 points) Evaluate the following integrals. For problem (a) it will be helpful to first write it as the sum of two integrals.

(a) $\int \frac{x^5 + x^2}{1 + x^6} dx$

(b) $\int_0^{\pi/3} \tan^3 x \sec^2 x dx$

4. (2 points) For $-2 \leq y \leq 2$, a region is bounded on the left by $x = 3$ and bounded on the right by $x = y^4 + 10$. Set up, but do not evaluate, one or more integrals which represent the area of this region.