

Answers to Test 3 Review Problems

1. (a) $58824 - 4 \ln(7)$ (b) 0 (c) $e^4 - 1$ (d) $1/2$ (e) $\sqrt{\tan x}$
2. (a) $2 - \pi$ (b) $(7 - 2\pi)/10$ (c) $x = -3, y = \pi$ (d) $(-3, 1)$ (e) $x = -1, 3$ (f) $(-1, 3)$
3. (a) consequences: For any y in $[0, 3]$ there is a c in $[-5, 5]$ such that $g(c) = y$
(b) g does not satisfy the hypothesis of the MVT on $[1, 4]$ since it isn't differentiable at $x = 3$.
(c) There is no c in $(1, 4)$ such that $g'(c) = 1/3$.
4. The integral equals 0 since the integrand function is odd and the interval of integration is symmetric about $x = 0$.
6. $y = 3$ is a horizontal asymptote; $x = -2$ is a vertical asymptote.
7. $A = 14,062.5$ square feet
8. (a) ∞ (b) 0 (c) ∞ (d) -2
9. (a) $\frac{10}{1 + 9e^{-.01308t}}$ (b) 6.7826 billion
(c) More, e.g., in 2025, the exponential growth model predicts 7.5829 billion.