

PRACTICE2

Name _____ Section _____

1. Determine the average value of the function $f(x) = \frac{4}{1+x^2}$ on $0 \leq x \leq \sqrt{3}$.
(no decimal answers; evaluate completely)

2. Determine the average value of the function $f(x) = \sqrt{x}$ on $1 \leq x \leq 36$.

3. Determine b so that the average value of $f(x) = 2x + 3$ on $[1, b]$ is 10.

4. Determine c on $[1, 4]$ so that $f(c)$ is the average value of the function $f(x) = 3x^2 + 2x + 1$ on $[1, 4]$. (Mean Value of the Integral)

5. Show the evaluation of the integral. Determine the value of the improper integral if it converges. If it diverges, show it.

$$(a) \int_0^{\infty} x e^{-2x^2} dx$$

$$(b) \int_0^{\infty} \frac{4x + 6}{x^2 + 3x + 7} dx$$

$$(c) \int_0^{\infty} \frac{5}{x^2 + 9} dx$$

$$(d) \int_0^1 \frac{4}{\sqrt{1-x^2}} dx$$

$$(e) \int_0^1 \frac{4}{\sqrt{1-x}} dx$$

$$(f) \int_0^1 \frac{4}{1-x^2} dx$$

$$(g) \int_5^{10} \frac{4}{(x-5)^{2/3}} dx$$