

M408C Practice Test 3, sec's 4.7–6.2

No Calculators, books, notes, etc.

1. Evaluate $\int 3x^2 + \frac{1}{\sqrt[3]{x}} + \sec^2 x \, dx$.

2. Evaluate $\int_0^{\pi/4} \sin^5 x \cos x \, dx$.

3. R is the region in the plane bounded by $y = \sqrt{x}$, $y = 0$ and $x = 4$. Find the volume of the solid formed by rotating R about the line $y = -1$.

4. Find the volume of the largest right circular cylinder which can be inscribed in a sphere of radius 10.

5. Use the limit definition of definite integral to find $\int_2^5 2x^2 - 3x + 5 \, dx$.

6. Evaluate $\int_0^2 x\sqrt{x+2} \, dx$.

7. Find values a , b , and c that will make $f(x) = \cos x$ and $g(x) = a + bx + cx^2$ satisfy the conditions: $f(0) = g(0)$, $f'(0) = g'(0)$, and $f''(0) = g''(0)$.