**Math 163 (Cowen)**        **Make-up Test 4**        **18 April 2008**

There are 5 pages, 20 questions, and 100 points on this test. No partial credit!
**You will have 1 hour to complete this test!**

For each question, find an anti-derivative, an indefinite integral, or the definite integral, as indicated.

*(10 points)*    **1.** $f'(x) = 4x^5 - 8.1x^2 + 14.4x + 13.7$

$f(x) =$

*(10 points)*    **2.** $g'(t) = 7\sqrt{t^5} - \dfrac{5}{\sqrt[3]{t}} + \dfrac{8}{t^4}$

$g(t) =$

*(10 points)*    **3.** $h'(r) = \dfrac{r^5 - 2r^4 + 5}{r^3}$

$h(r) =$

*(10 points)*    **4.** $R'(\theta) = 4\sin\theta - 2(\sec\theta)^2$

$R(\theta) =$

*(10 points)*  **5.** $\int x^5 - 6x + 3 \, dx =$

*(10 points)*  **6.** $\int r^2(2r^3 - 3) \, dr =$

*(10 points)*  **7.** $\int \dfrac{4y^4 - 3y + 5}{\sqrt{y}} \, dy =$

*(10 points)*  **8.** $\int 5\cos\theta - 3\sec\theta\tan\theta \, d\theta =$

*(10 points)*   **9.** $\displaystyle\int (5 - 4z)^6\, dz =$

*(10 points)*   **10.** $\displaystyle\int (y^3 + 1)^6 y^2\, dy =$

*(10 points)*   **11.** $\displaystyle\int x^2 \sqrt[3]{x^3 + 4}\, dx =$

*(10 points)*   **12.** $\displaystyle\int 5 \cos 4t - 6 \sec 2t \tan 2t\, dt =$

*(10 points)*    **13.** $\int 4x^2 \sin(x^3 + 4)\, dx =$

*(10 points)*    **14.** $\int \frac{4}{(2r - 5)^3}\, dr =$

*(10 points)*    **15.** $\int_{-2}^{2} y^2 + 5y + 3\, dy =$

*(10 points)*    **16.** $\int_{-\pi}^{\pi} \cos \frac{t}{2}\, dt =$

*(10 points)*    **17.** $\displaystyle\int_0^1 \sqrt{3a+1}\, da =$

*(10 points)*    **18.** $\displaystyle\int_2^4 \frac{y}{(y^2-1)^2}\, dy =$

*(10 points)*    **19.** $\displaystyle\int_{-1}^3 (z+1)(z^2+2z)^2\, dz =$

*(10 points)*    **20.** $\displaystyle\int_0^{\pi/2} \sin\theta(\cos\theta)^4\, d\theta =$