NAME: _____

Math 23200 (Cowen) **Test 1 (Practice)** **10 January 2019**

There are 4 pages and 16 questions. No partial credit! Scoring will be '110' for all correct, '100' for one incorrect, '90' for 2 incorrect, '80' for 3 incorrect, etc., to '−50' for all incorrect.

You will have 45 minutes to complete this test!

For each of the questions 1 – 8, find the derivative of the given function.

(10 points) **1.** $f(x) = 4x^5 + 3\sqrt{x^{11}} - \dfrac{3}{\sqrt{x}} - \dfrac{4}{x^8}$

$f'(x) =$

(10 points) **2.** $g(t) = 3e^{4t}$

$g'(t) =$

(10 points) **3.** $y = 8.3 \ln 5t$

$y' =$

(10 points) **4.** $h(w) = \dfrac{5}{\sqrt{16 - w^2}}$

$h'(w) =$

(10 points) **5.** $r(\theta) = e^{\tan 5\theta}$

$r'(\theta) =$

(10 points) **6.** $f(t) = \ln(2 + e^{-3t^2})$

$f'(t) =$

(10 points) **7.** $h(w) = \ln\left(\dfrac{5w^3 + \cos w}{3 + e^{2w}}\right)$

$h'(w) =$

(10 points) **8.** $y = (x^8 + 5)^5 e^{3x^4}$

$y' =$

For each of the questions 9 – 16, find an indefinite integral or the definite integral, as indicated.

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

(10 points) **10.** $\int (2y^2+3)^5 y\,dy =$

(10 points) **11.** $\int \left(3e^{2x}+1\right)^5 e^{2x}\,dx =$

(10 points) **12.** $\int 4\sin 5t - 2(\sec 3t)^2\,dt =$

(10 points) **13.** $\int_{-1}^{1} 12a^2 + 5\,da =$

(10 points) **14.** $\int_{0}^{4} \sqrt{25 - 4y}\,dy =$

(10 points) **15.** $\int_{0}^{4} \dfrac{12x}{144 + x^2}\,dx =$

(10 points) **16.** $\int_{0}^{\pi/2} (\sin 2y) e^{\cos 2y}\,dy =$