Practice Exam 1

Instructions: The exam should be solvable in 45 minutes. Do not use a calculator.

1 (15 points)   Evaluate $\sum\limits_{k=1}^{20}(2k-2)$.

2 (15 points)   If $f(x)$ is continuous and $\int\limits_0^{25} f(x)\,dx = 8$, what is $\int\limits_0^5 f(x^2)x\,dx$?

3 (20 points)   Find the area of the region bounded between the curves $y = 3x$ and $y = x^2$.

4 (30 points)   Evaluate the following definite integrals:

(a) $\int\limits_0^3 x^2(1+4x)\,dx$

(b) $\int\limits_{-2}^1 (2x - |x|)\,dx$

(c) $\int\limits_0^1 \frac{x}{1+x^4}\,dx$

5 (20 points)   Compute the following indefinite integrals:
(Example: $\int 10x^4\,dx = 2x^5 + C$. Don't forget the "$C$"...)

(a) $\int x^2 \sin(x^3)\,dx$

(b) $\int (3x+1)^{99}\,dx$