Name_____

Explain, illustrate, and/or justify your method of solution.
Each question is worth 7 points.

1. $\int x\left(1-3x^2\right)^5\,dx$

2. $\int \sec^2(4x)\tan(4x)\,dx$

3. $\int \frac{e^x\,dx}{1+e^{2x}}$

4. $\int \frac{e^{4x}\,dx}{3+e^{4x}}$

5. $\int \frac{dx}{\sqrt{1-2x}}$

6. $\int \frac{dx}{3-x}$

7. $\int_{a}^{3a} x^3\,dx$

8. $\int \frac{\cos(3x)}{1-\sin(3x)}\,dx$

9. $\int \frac{2x^2+3x-2}{3x^2}\,dx$

10. $\int \frac{\sin x-\cos x}{\cos x}\,dx$

11. A car traveling 20 m/sec. brakes to a stop in 4 seconds. If the deceleration is constant, determine the stopping distance.

$\sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}$ $\sum_{i=1}^{n} i = \frac{n(n+1)}{2}$ Name_____

12. Use the limit definition of the integral to evaluate $\int_{2}^{8} x^2\,dx$

13. If $f''(x) = 12x^2 - 6x + 2$, $f(-2) = 3$, and $f(0) = -1$, determine the equation for $f(x)$.

14. If $f(x) = x^2 + 3,\ 2 \le x \le 6$, find the left, right, and middle sums for $n = 8$ subintervals. State your method and/or list the terms of the sums.