BC CALCULUS PRACTICE 6.8 **Name:** _____ **Period** _____

Aisle: _____ pg. 423 – 6-45 multiples of 3 (one way each), 51, 55, 57

For problems 6 and 15, evaluate the definite integral using Method 1. For problems 12 and 18, evaluate the definite integral using Method 2.

6. Method 1 $\int_1^2 (4x-2)^3 dx$	12. Method 2 $\int_0^{\pi/6} 2\cos 3x\, dx$
15. Method 1 $\int_{-\ln 3}^{\ln 3} \frac{e^x}{e^x+4} dx$	18. Method 2 $\int_{\ln 2}^{\ln \frac{2}{\sqrt{3}}} \frac{e^{-x}}{\sqrt{1-e^{-2x}}} dx$
21. Evaluate by expressing the definite integral in terms of u and evaluating the resulting integral using a formula from geometry. $\int_{\pi/3}^{\pi/2} \sin\theta \sqrt{1-4cos^2\theta} d\theta; u = 2\cos\theta$	24. Find the area under the curve $y = 3\cos 2x$ over the interval $[0, \pi/8]$.
27. Find the area of the region enclosed by the graphs of $y = \frac{1}{\sqrt{1-9x^2}}, y = 0, x = 0, x = \frac{1}{6}$	30. Evaluate by any method. $\int_1^2 \sqrt{5x-1} dx$

33.
$$\int_1^3 \frac{x+2}{\sqrt{x^2+4x+7}}dx$$

36.
$$\int_0^{\pi/4} \sqrt{\tan x}\, sec^2 x dx$$

39.
$$\int_{\pi/12}^{\pi/9} sec^2 3\theta d\theta$$

42.
$$\int_{-1}^4 \frac{x}{\sqrt{5+x}}dx$$

45.
$$\int_0^1 \frac{x}{\sqrt{4-3x^4}}dx$$

48.
$$\int_1^{\sqrt{3}} \frac{x}{3+x^4}dx$$

51.

(a) Find $\int_0^1 f(3x+1)\,dx$ if $\int_1^4 f(x)\,dx = 5.$

(b) Find $\int_0^3 f(3x)\,dx$ if $\int_0^9 f(x)\,dx = 5.$

(c) Find $\int_{-2}^0 xf(x^2)\,dx$ if $\int_0^4 f(x)\,dx = 1.$

55. Suppose that at time $t = 0$ there are 750 bacteria in a growth medium and the bacteria population $y(t)$ grows at the rate of $y'(t) = 802.137e^{1.528t}$ bacteria per hour. How many bacteria will there be in 12 hours?

57. Find a positive value of k such that the area under the graph of $y = e^{2x}$ over the interval $[0, k]$ is 3 square units.