Calculus

Name_____

# Review for Integration Test

Date_____ Period____

**For each problem, approximate the area under the curve over the given interval using 4 left endpoint rectangles.**

1) $y = -\frac{x^2}{2} - x + 5;\ [-4, 0]$

**For each problem, approximate the area under the curve over the given interval using 4 midpoint rectangles.**

2) $y = \frac{x^2}{2} + 2;\ [0, 4]$

**Evaluate each sum.**

3) $\sum_{k=1}^{n} (16k^2 + 12)$

**Evaluate each limit.**

4) $\lim_{n\to\infty} \sum_{k=1}^{n} \left(\frac{14}{n} + \frac{49k}{n^2}\right)$

5) $\lim_{n\to\infty} \sum_{k=1}^{n} \left(\frac{12}{n} + \frac{27k^2}{n^3}\right)$

**Evaluate each definite integral.**

6) $\int_{-2}^{1} (-x^4 + 3x^2 - x - 1)\, dx$

7) $\int_{-6}^{-2} -2x^{\frac{1}{3}}\, dx$

8) $\int_{2}^{4} \frac{2}{x^3}\, dx$

9) $\int_{1}^{2} \frac{3}{x}\, dx$

10) $\int_{-3}^{1} -2e^{x}\, dx$

11) $\int_{-\pi}^{\frac{5\pi}{6}} -\cos x\, dx$

12) $\int_{0}^{\frac{\pi}{6}} -2\sec^2 x\, dx$

13) $\int_{\frac{\pi}{6}}^{\frac{\pi}{4}} -\sec x \tan x\, dx$

14) $\int_{-4}^{-3} \frac{3}{(2x+4)^2}\, dx$

15) $\int_{-4}^{-2} -3e^{x+2}\, dx$

16) $\int_{0}^{2} \frac{4x}{(x^2+2)^3}\, dx$

17) $\int_{-2}^{0} 6x(x^2-3)^2\, dx$

18) $\int -40x^4 \sec^2(4x^5-5)\, dx$

19) $\int -\frac{25e^{5x}}{\cos^2(e^{5x}-5)}\, dx$

20) $\int -\frac{60x^2}{5x^3+2}\, dx$

21) $\int -24xe^{4x^2+3}\, dx$