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Sample Test 3 Nov 21, 2001

1 $\int_0^1 4x(4x^2-2)^2\,dx$ is:

2 $\int \frac{x^3+7x^2+5}{x^2}\,dx$ is:

3 $\int_{-7}^{-2} \sqrt{2-x}\,dx$ is:

6 If $f(x) = \int_4^x \sqrt{t^2-7}\,dt$, then $f'(4)$

I.

1. Consider the integral
   $\int_1^4 x^2 - 1\,dx$
   Evaluate the integral by dividing the interval into n equal subintervals and express the integral as a sum.
   $\sum_1^n i^1 = n(n+1)/2$, $\sum_1^n i^2 = n(n+1)(2n+1)/6$, $\sum_1^n i^3 = n^2(n+1)^2/4$

II. Integrate each of the following:

1. $\int_2^1 \frac{2\,dx}{(x)^3}$ is:
2. $\int_0^1 (4x^2-2)^4 6x\,dx$ is:
3. $\int \frac{x^2+6}{x^2}\,dx$.
   Hint: divide out.
4. $\int_1^6 \sqrt{3+x}\,dx$
5. $\int_{-2}^{-1} \frac{dx}{(x+4)^2}$
6. $\int_1^3 x\sqrt{x^2-1}\,dx$
7. $\int_0^1 x^3\sqrt{x^4+1}\,dx$
8. $\int_0^{\frac{1}{4}} \sin(\pi x)\,dx$
9. $\int \sin^3(x)\cos(x)\,dx$
10. $\int \sin(x)\cos(x)\,dx$
16. $D_x \int_x^{15} \sqrt{(t^3+1)}\,dt$

III.

1. $\int_0^1 (4x^2-2)^4 6x\,dx$ is:

3. $\int_1^6 \sqrt{3+x}\,dx$ is:

6. $\int_{-2}^{-1} \frac{dx}{(x+4)^2}$ is:

7. $\int_1^3 x\sqrt{x^2-1}\,dx$ is:

19. $\int_0^{\pi} \frac{1-\sin^2 x}{\cos x}\,dx$ is:

29. $D_x \int_{15}^x \sqrt{t^3+1}\,dt$

22. $\int_0^1 4x(x^2+2)^3 dx$ is:

23. $\int_0^1 x^3\sqrt{x^4+1}\,dx$

24. The solution of $y' = 2x+3$ satisfying $y = 2$ when $x = 0$ is

25. The solution to $y' = 2x^2 + 6x + 2$ satisfying $y = 1$ when $x = 0$ is:

28. $\int_3^1 \frac{dx}{(x+1)^3}$ is:

29. $\int_0^2 x^2\sqrt{2x^3+1}dx$ is:

30. $D_x \int_4^x \sqrt{t^2-7}dt$ is:

31. $\int_0^1 (x^2+1)^7 x\ dx$ is:

32. $\int_{-7}^{-2} \sqrt{2-x}\ dx$ is:

34. $\int_0^1 \dfrac{2\ dx}{(x+1)^3}$ is:

1 $\int_0^1 4x(4x^2-2)^2\ dx$ is:

2 $\int \dfrac{x^3+7x^2+5}{x^2}\ dx$ is:

3 $\int_{-2}^2 \sqrt{2-x}\ dx$ is:

6 $\int_0^1 x^2\sqrt{2x^3+2}\ dx$ is:

9 The average value of the function $f(x) = x^3$ from $x = 1$ to $x = 3$ is:

14 $\int_0^\infty \dfrac{x}{\sqrt{x^2+1}}\ dx$ is:

4. The solution of $y' = 8x - 3$ satisfying $y = 0$ when $x = 1$ is

6. $\displaystyle\int_{-2}^{-1} \frac{dx}{(x+4)^2}$ is:

7. $\displaystyle\int_1^3 x\sqrt{x^2-1}\ dx$ is:

29. $D_x \displaystyle\int_{15}^x \sqrt{t^3+1}\ dt$

2. For $f(x) = \cos(x)$ on $[0\ ,\ \frac{\pi}{2}]$, define a partition whose intervals are not all equal of six points and the associated values x_i^* then

b. Find the Riemann sum.

II. Integrate each of the following:

1. $\displaystyle\int_0^1 \frac{2\ dx}{(x)^3}$ is:

2. $\displaystyle\int_0^1 (4x^2-2)^4 6x\ dx$ is:

3. $\displaystyle\int \frac{x^2+6}{x^2}\ dx$.

Hint: divide out.