

Calc. AB Classwork 4.1 – 4.3

Name: _____ Date: _____ Pd: _____

For #'s 1 – 8, find the given definite or indefinite integral.

1. $\int -3x^4 dx =$

2. $\int \frac{3}{x^3} dx =$

3. $\int \sqrt[4]{x^3} dx =$

4. $\int \frac{2x^3 + 3x - 1}{\sqrt{x}} dx =$

5. $\int_0^4 \sqrt{x} + \frac{1}{2\sqrt{x}} dx =$

6. $\int_2^3 (x^2 + 1)^2 dx =$

7. $\int (6t^2 - \sin t) dt$

8. $\int \left(\frac{1}{x^2} + \sec^2 x \right) dx$

9. $\frac{d}{dx} \int_0^x \left(\sec^2 t + \frac{1}{2}t \right) dt =$

10. Find $F'(x)$ given $\int_{2x}^{\frac{1}{2}x^2} \frac{1}{t+1} dt$

11. Solve the differential equation given $f'(x) = 6x^2$, $f(0) = -1$.

12. Solve the differential equation given $f''(x) = x^2$, $f'(0) = 6$, $f(0) = 3$.

13. Use 5 rectangles to give two approximations of $y = x^3$ in the interval of $x = 0$ and $x = 2$.