

1) Find: $\int \sqrt[4]{x^5} \, dx$

2) Find: $\int \left(2x^2 + \frac{1}{x^3}\right) \, dx$

3) Find: $\int \left[5e^x - \frac{1}{x}\right] \, dx$

4) Find: $\int \frac{6 + x^2}{x} \, dx$

- 5) The rate of change in the numbers of students living on campus at a certain university can be modeled by $f(x) = 0.18x^2 - 2.45x + 3.73$; $1 \leq x \leq 11$ where x is the number of years since 1990 and $f(x)$ is the rate of students living on campus measured in thousands of students per year.

i) Evaluate $f(7)$ and interpret.

ii) Knowing that there were 68 thousand students living on campus in 2000, recover F , the function that gives the number of students living on campus.

iii) Evaluate $F(7)$ and interpret.

Answer Key

Testname: WORKSHEET 5.1 ANTIDERIVATIVES

1) $\frac{\sqrt[4]{x^9}}{9} + C$

2) $\frac{2}{3}x^3 - \frac{1}{2x^2} + C$

3) $5e^x - \ln |x| + C$

4) $6 \ln |x| + \frac{1}{2}x^2 + C$

5) i) $f(7) \approx -4.6$;

In 1997, the rate of students living on campus was decreasing by approximately 5 thousand students per year.

ii) $F(x) = 0.06x^3 - 1.225x^2 + 3.73x + 93.2$

iii) $F(7) \approx 79.87$;

In 1997, there were approximately 80 thousand students living on campus.