

A. Compute $\int (x^2 + 5)^3 2x \, dx$.

Solution:

(1). let $u = \underline{\hspace{2cm}}$

$$du = 2x \, dx$$

$$\int (x^2 + 5)^3 = \int u^3 \, du$$

$$= \frac{u^4}{4} + C$$

(2). $\int (x^2 + 5)^3 = \underline{\hspace{2cm}}$

B. Compute $\int 6x^2 \sqrt{2x^3 + 5} \, dx$

let $u = 2x^3 + 5$

(3). $du = \underline{\hspace{2cm}}$

$$\int \sqrt{2x^3 + 5} \, 6x^2 \, dx = \int \sqrt{u} \, du$$

(4). $= \underline{\hspace{2cm}}$

$$= \frac{u^{\frac{3}{2}}}{\frac{3}{2}} + C$$

$$= \frac{2}{3} u^{\frac{3}{2}} + C$$

$\int 6x^2 \sqrt{2x^3 + 5} \, dx =$ (5). $\underline{\hspace{2cm}}$

- A. $6x^2 \, dx$
 B. $x^2 + 5$
 C. $\frac{(x^2+5)^4}{4} + C$
 D. $\int (u)^{\frac{1}{2}} \, du$
 E. $\frac{2}{3} (2x^3 + 5)^{\frac{3}{2}} + C$
 F. $\int (u)^{\frac{3}{2}} \, du$