

ANSWER to Question #87996 – Math – Calculus

Question

9. Integrate $\int(x^3+3x^2+2x+4)$

a.

$$x^4$$

$$+x^3+x^2+4x+c$$

$$4$$

b.

$$x^4$$

$$-x^3+x^2+4x+c$$

$$2$$

c.

$$x^4$$

$$+2x^3+x+c$$

$$4$$

d.

$$6x^4-3x^2+c$$

10. Evaluate $\int_2^{-1} y^2+y^{-2} dy$

a.7

--

16

b.3

--

16

c.17

--

16

d.5

Solution

$$\begin{aligned} 9. \int (x^3 + 3x^2 + 2x + 4) dx &= \int (x^3) dx + 3 \int (x^2) dx + 2 \int (x) dx + 4 \int dx \\ &= \frac{x^{3+1}}{3+1} + 3 \frac{x^{2+1}}{2+1} + 2 \frac{x^{1+1}}{1+1} + 4x + C \\ &= \frac{x^4}{4} + 3 \frac{x^3}{3} + 2 \frac{x^2}{2} + 4x + C \\ &= \frac{x^4}{4} + x^3 + x^2 + 4x + C \end{aligned}$$

Hence option A is correct.

$$\begin{aligned} 10. \int_{-1}^2 (y^2 + y^{-2}) dy &= \left(\frac{y^{2+1}}{2+1} + \frac{y^{-2+1}}{-2+1} \right) \Big|_{-1}^2 = \left(\frac{2^3}{3} + \frac{2^{-1}}{-1} \right) - \left(\frac{(-1)^3}{3} + \frac{(-1)^{-1}}{-1} \right) \\ &= \left(\frac{8}{3} - \frac{1}{2} \right) - \left(-\frac{1}{3} + 1 \right) = \frac{13}{6} - \frac{2}{3} = \frac{9}{6} = \frac{3}{2} \end{aligned}$$

None of the given options is correct.