

Answers

- (1) Mid-points of the intervals are 0.25, 0.75, 1.25 and 1.75.

$A \approx 0.5 \times (0.25^4 + 0.75^4 + 1.25^4 + 1.75^4) = 6.0703$. The exact answer is

$$\int_0^2 x^4 dx = \left[\frac{x^5}{5} \right]_0^2 = \frac{2^5}{5} - 0 = 6.4$$

- (2) (a) $\frac{x^9}{9} + c$ (b) $\frac{x^{-3}}{-3} + c$ (c) $\frac{5x^{9/5}}{9} + c$ (d) $\frac{2}{7}$

- (3) (a) $\frac{x^3}{3} + x^2 - 4x + c$ (b) $\frac{x^7}{7} - \frac{x^5}{5} + x^3 + 2x + c$

- (c) $\frac{-1}{2x^2} + c$ (d) $\frac{2x^{3/2}}{3} + 2\sqrt{x} + c$

- (e) $\frac{x^3}{3} - \frac{5x^2}{2} + 6x + c$ (f) $2x^3 + \frac{5x^2}{2} - 4x + c$

- (g) $\frac{x^2}{2} - \frac{2}{x} - \frac{5}{2x^2} + c$ (h) $3x^3 - 3x^2 + x + c$

- (i) $g(x) = x^4 + 2x^3 + x + c$ Final Answer = 34.

- (j) $g(x) = \frac{x^3}{5} - \frac{1}{x} + c$ Final Answer = $\frac{81}{4} = 20.25$

- (k) $g(x) = \frac{2x^{3/2}}{3} + x - 4\sqrt{x}$ Final Answer = 5.8426

- (l) $g(x) = \frac{2x^{5/2}}{5} - \frac{3x^{5/3}}{5} + c$ Final Answer = $-\frac{1}{5} = -0.2$

- (m) $g(x) = \frac{x^5}{5} - 2x^3 + 7x + c$ Final Answer = $\frac{78}{5} = 15.6$

- (n) $g(x) = x - \frac{1}{x} + c$ Final Answer = $\frac{3}{2} = 1.5$

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