

Bestimme den Flächeninhalt im Intervall

Lösung

1) $f(x) = 5x^2 + 3$ [1;2]

1) $F(X) = \frac{5x^3}{3} + \frac{3x}{1}$

$A = 19,3333 - 4,6667 = 14,67 \text{ FE}$

2) $f(x) = 6x^4 + 2x^2$ [2;4]

2) $F(X) = \frac{6x^5}{5} + \frac{2x^3}{3}$

$A = 1271,4667 - 43,7333 = 1227,73 \text{ FE}$

3) $f(x) = 5x^6 + 2x^4 + 6x^2$ [3;4]

3) $F(X) = \frac{5x^7}{7} + \frac{2x^5}{5} + \frac{6x^3}{3}$

$A = 12240,4570999999 - 1713,3429 = 10527,1$

4) $f(x) = 7x^3 - 4x^2 - 7x$ [1;6]

4) $F(X) = \frac{7x^4}{4} - \frac{4x^3}{3} - \frac{7x^2}{2}$

$A = 1854 - (-3,0833) = 1857,08 \text{ FE}$

5) $f(x) = 7x^5 - 5x^4 - 3x$ [1;2]

5) $F(X) = \frac{7x^6}{6} - \frac{5x^5}{5} - \frac{3x^2}{2}$

$A = 36,6667 - (-1,3333) = 38 \text{ FE}$

6) $f(x) = 2x^6 + 6x^4 - 8x^2 - 6x$ [0;5]

6) $F(X) = \frac{2x^7}{7} + \frac{6x^5}{5} - \frac{8x^3}{3} - \frac{6x^2}{2}$

$A = 25663,0952 - 0 = 25663,1 \text{ FE}$

7) $f(x) = 4x^5 - 4x^3 + 3x^2 - 5x$ [-1;1]

7) $F(X) = \frac{4x^6}{6} - \frac{4x^4}{4} + \frac{3x^3}{3} - \frac{5x^2}{2}$

$A = -1,8333 - (-3,8333) = 2 \text{ FE}$

8) $f(x) = 5x^6 - 2x^5 - 5x^4 + 4x^2$ [1;5]

8) $F(X) = \frac{5x^7}{7} - \frac{2x^6}{6} - \frac{5x^5}{5} + \frac{4x^3}{3}$

$A = 47636,9048 - 0,7143 = 47636,19 \text{ FE}$

9) $f(x) = 8x^8 - 2x^6 - 5x^4 - 3x^3 + 2x^2$ [-1;5]

9) $F(X) = \frac{8x^9}{9} - \frac{2x^7}{7} - \frac{5x^5}{5} - \frac{3x^4}{4} + \frac{2x^3}{3}$

$A = 1710279,2659 - (-1,0198) = 1710280,29 \text{ FE}$

10) $f(x) = 6x^4 - 4x^3 + 7x^2 - 6x^1 - 7$ [1;6]

10) $F(X) = \frac{6x^5}{5} - \frac{4x^4}{4} + \frac{7x^3}{3} - \frac{6x^2}{2} - \frac{7x}{1}$

$A = 8389,2 - (-7,4667) = 8396,67 \text{ FE}$

11) $f(x) = 8x^7 - 3x^5 - 6x^4 + 2x^3 - 3x^2$ [-1;4]

11) $F(X) = \frac{8x^8}{8} - \frac{3x^6}{6} - \frac{6x^5}{5} + \frac{2x^4}{4} - \frac{3x^3}{3}$

$A = 62323,2 - 3,2 = 62320 \text{ FE}$