

Antiderivatives

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Pg 45

Ex. $f(x) = 2x + 3x^{1.7}$
 $F(x) = 2 \frac{x^2}{2} + 3 \frac{x^{2.7}}{2.7} + C$
 $= x^2 + \frac{3}{2.7} x^{2.7} + C$

Ex. Find the antiderivatives

1) $f(x) = \sqrt[4]{x^3} + \sqrt[3]{x^4} = x^{3/4} + x^{4/3}$
 $F(x) = \frac{x^{3/4+1}}{3/4+1} + \frac{x^{4/3+1}}{4/3+1} + C = \frac{x^{7/4}}{7/4} + \frac{x^{7/3}}{7/3} + C$

2) $f(x) = 7\sec^2 x + 2$
 $F(x) = 7\tan x + 2x + C$

3) $f(x) = \frac{5 - 4x^3 + 2x^6}{x^2}$ * no quotient rule for antiderivatives.
try changing form

$$= \frac{5}{x^2} - \frac{4x^3}{x^2} + \frac{2x^6}{x^2}$$

$$= 5x^{-2} - 4x + 2x^4$$

$$F(x) = 5 \frac{x^{-2+1}}{-2+1} - 4 \frac{x^{-3+1}}{-3+1} + 2x + C$$

$$= 5 \frac{x^{-1}}{-1} - 4 \frac{x^{-2}}{-2} + 2x + C$$

$$= -x^{-1} + 2x^{-2} + 2x + C$$

4) $f(x) = x^2(2x-3)^2$ * no product rule for antiderivatives.

$$= x^2(4x^2 - 12x + 9) = 4x^4 - 12x^3 + 9x^2$$

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