Berechnen Sie eine Stammfunktion von:

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a) $f(x) = x^{-2} - 2x^{-3}$ $\quad F(x) = -x^{-1} + x^{-2} = \frac{1}{x^2} - \frac{1}{x}$

$f(x) = 4x^{-3} - 4x^3$ $\quad F(x) = -2x^{-2} - x^4 = -\frac{1}{x^2} - x^4$

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

b) $f(x) = x + 2 + \frac{1}{x^2} = x + 2 + x^{-2}$

$F(x) = \frac{x^2}{2} + 2x - x^{-1} = \frac{x^2}{2} + 2x - \frac{1}{x}$

$f(x) = \frac{1}{x^3} - \frac{2}{x^5} = x^{-3} - 2x^{-5}$

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

$f(x) = \frac{4}{x^2} + \frac{7}{x^3} + \frac{10}{x^4} = 4x^{-2} + 7x^{-3} + 10x^{-4}$

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

c) $f(x) = \frac{2x^2 - 5}{x^2} = 2 - \frac{5}{x^2} = 2 - 5x^{-2}$ $\quad F(x) = 2x + 5x^{-1} = 2x + \frac{5}{x} = \frac{2x^2 + 5}{x}$

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

Jede Stammfunktion darf durch den Summanden k ergänzt werden.