

What equation would have to be solved to use partial fractions to antidifferentiate the following integrals? STOP before multiplying through by the LCD.

1. $\int \frac{3dx}{x^3(x-1)(x^2+4)(x^2+x+1)^2}$

2. $\int \frac{xdx}{x(2x+1)^2(x^2+5)(x^2+1)}$

3. Write the trig substitution used to start the problem. Stop before differentiating.

a) $\int \sqrt{4+x^2} dx$

b) $\int \sqrt{4-x^2} dx$

c) $\int \sqrt{x^2-4} dx$

d) $\int \sqrt{4x^2-1} dx$

e) $\int \sqrt{1-4x^2} dx$

f) $\int \sqrt{4x^2+1} dx$

g) $\int \sqrt{4+9x^2} dx$

h) $\int \sqrt{4-9x^2} dx$

i) $\int \sqrt{4x^2-9} dx$

j) $\int \sqrt{9x^2-4} dx$

4. Which of the following integrals can be done by letting $u = \tan x$?

(i) $\int \sec^3 x \tan^2 x dx$ (ii) $\int \sec^4 x \tan^2 x dx$ (iii) $\int \sec^4 x \tan^3 x dx$ (iv) $\int \sec^3 x \tan^5 x dx$