

Name: _____

Partial Decomposition

1) Decompose the rational function into partial fractions

1) $f(x) = \frac{x-8}{x^2-16}$

2) $f(x) = -\frac{24}{x^2-8x+12}$

3) $f(x) = \frac{2x}{x^2+x-20}$

4) $f(x) = \frac{x^2+5x-14}{5x+7}$

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

6) $f(x) = \frac{9x^2-1}{3x-2}$

7) $f(x) = \frac{x+8}{x^2+5x+4}$

8) $f(x) = \frac{25x^2-36}{x^2-5x+4}$

9) $f(x) = \frac{x^2+7x+6}{x^2-5x-24}$

10) $f(x) = \frac{x^2+1}{(x+2)(x+4)}$

2) Find the partial fractions

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

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

3) $\frac{2}{y^2(y-1)}$

4) $\frac{1}{(x+1)(x+3)^3}$

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

6) $\frac{14}{(x^2+3)(x+2)}$

7) $\frac{3}{(x+1)(x^2+4)}$

8) $\frac{x^2+3x-5}{x^2+2x-8}$

9) $\frac{x^2+4x-2}{x^2+5x+6}$

10) $\frac{2}{y(y^2+1)}$

11) $\frac{r^2+1}{r^2-1}$

12) $\frac{x^3+3x^2+2x-3}{(x+2)(x-1)}$

3)

13)
$$\frac{4}{(x+3)(x-1)^2}$$

14)
$$\frac{x^2-1}{x^2-9}$$

15)
$$\frac{3p+1}{(2p-1)(p+2)^2}$$

16)
$$\frac{4x-5}{(2x+1)(x^2-6x+9)}$$

17)
$$\frac{10}{(y-1)(y^2+9)}$$

18)
$$\frac{10x}{(x-1)(x^2-9)}$$

19)
$$\frac{x^4+1}{x^4-1}$$

20)
$$\frac{u^2-1}{u^2(2u+1)}$$

4) Find the constants A, B, C and D so that the given equation is true on its domain

1)
$$\frac{3x^2+7x+1}{x(x+1)^2} = \frac{A}{x} + \frac{B}{x+1} - \frac{C}{(x+1)^2}$$

2)
$$\frac{2x^2+4x-1}{(x^2+x+1)^2} = \frac{Ax+B}{x^2+x+1} + \frac{Cx+D}{(x^2+x+1)^2}$$

3)
$$\frac{5x^2-9x+19}{(x-4)(x^2+5)} = \frac{A}{x-4} + \frac{Bx+C}{x^2+5}$$