**2001**

A5. (a) Obtain partial fractions for $\frac{x}{x^2-1}, x>1.$ **(2)**

**2002**

A8. Express $\frac{x^2}{(x+1)^2}$ in the form $A+\frac{B}{x+1}+\frac{C}{(x+1)^2}, (x\neq -1),$ stating the values of the constants *A, B* and *C*. **(3)**

**2004**

5. Express $\frac{1}{x^2-x-6}$ in partial fractions. **(2)**

**2005**

13. Express $\frac{1}{x^3+x}$ in partial fractions. **(4)**

**2007**

4. Express $\frac{2x^2-9x-6}{x(x^2-x-6)}$ in partial fractions. **(3)**

**2008**

4. Express $\frac{12x^2+20}{x(x^2+5)}$ in partial fractions. **(3)**

**2009**

14. Express $\frac{x^2+6x-4}{(x+2)^2(x-4)}$ in partial fractions. **(4)**

**2011**

1. Express $\frac{13-x}{x^2+4x-5}$ in partial fractions **(2)**

**2012**

15. (a) Express $\frac{1}{(x-1)(x+2)^2}$ in partial fractions **(2)**

**2014**

14. (b) Express $\frac{1}{3r^2-5r+2}$ in partial fractions. **(2)**

**2015**

17. Find $\int \frac{2x^3-x-1}{(x-3)(x^2+1)}dx, \ x>3.$ **(9)**

**2016**

13. Express $\frac{3x+32}{(x+4)(6-x)}$ in partial fractions

**2017**

2. Express $\frac{x^2-6x+20}{(x+1)(x-2)^2}$ in partial fractions **(4)**

**2018**

2. Use partial fractions to find $\int \frac{3x-7}{x^2-2x-15}dx.$ **(4)**

**2019**

**4.** (a) Express $\frac{3x^2+x-17}{x^2-x-12}$ in the form $p+\frac{qx+r}{x^2-x-12}$, where $p$, $q$ and $r$ are integers. **1**

(b) Hence express $\frac{3x^2+x-17}{x^2-x-12}$ with partial fractions. **3**

# Answers

**2001**

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

**2002**

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

**2004**

$$\frac{1}{x^2-x-6}=\frac{1}{5(x-3)}-\frac{1}{5(x+2)}$$

**2005**

$$\frac{1}{x^3+x}=\frac{1}{x}-\frac{x}{x^2+1}$$

**2007**

$$\frac{1}{x}+\frac{2}{x+2}-\frac{1}{x-3}$$

**2008**

$$\frac{4}{x}+\frac{8x}{x^2+5}$$

**2009**

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

**2011**

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

**2012**

$$\frac{1}{9}\left(\frac{1}{x-1}-\frac{1}{x+2}-\frac{3}{(x+2)^2}\right)$$

**2014**

$$\frac{3}{(2-3r)}-\frac{1}{(1-r)}$$

**2015**

17. $2x+5\ln|x-3|+\frac{1}{2}\ln(x^2+1)+k$

**2016**

13. $\frac{2}{x+4}+\frac{5}{6-x}$

**2017**

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

**2018**

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

**2019**

a) $3+\frac{4x+19}{x^2-x-12}$

b) $3-\frac{1}{x+3}+\frac{5}{x-4}$