More problems for section 7.4 of *Calculus, Early Transcendentals* by James Stewart, 8e.

1. Find the partial fraction decomposition. Precede with long division if necessary.

a. $\dfrac{31-4x-3x^2}{(-1+x)(1+x)(5+x)}$

b. $\dfrac{-11-10x+9x^2}{(x-2)(x-1)(3+x)}$

c. $\dfrac{19-5x-2x^2}{(-5+x)(2+x)(3+x)}$

d. $\dfrac{25-23x+4x^2}{(-4+x)(-3+x)(-1+x)}$

e. $\dfrac{80-14x-x^2}{(-6+x)(-2+x)(4+x)}$

f. $\dfrac{16-29x+8x^2}{(-4+x)(-2+x)(3+x)}$

g. $\dfrac{15+22x+3x^2}{(-1+x)(1+x)(3+x)}$

h. $\dfrac{16+7x+3x^2}{(-5+x)(1+x)(2+x)}$

i. $\dfrac{-37+24x-3x^2}{(-3+x)^2(1+x)}$

j. $\dfrac{13-15x+5x^2}{(-2+x)(-1+x)^2}$

k. $\dfrac{-6+7x-3x^2}{(-2+x)(-1+x)^2}$

l. $\dfrac{-9+6x-2x^2}{(-2+x)^2(-1+x)}$

m. $\dfrac{-4+10x+5x^2}{(-2+x)(1+x)^2}$

n. $\dfrac{61+42x+7x^2}{(3+x)^2(4+x)}$

o. $\dfrac{-17-8x-x^2}{(3+x)(4+x)^2}$

2. Find the partial fraction decomposition. Precede with long division if necessary.

a. $\dfrac{6+10x+3x^2}{(1+x)(2+x)}$

b. $\dfrac{-26-5x+5x^2}{(-3+x)(1+x)}$

c. $\dfrac{7-6x^2+4x^3}{(-2+x)(1+x)}$

d. $\dfrac{6+14x+11x^2+2x^3}{(2+x)(4+x)}$

e. $\dfrac{12-12x-2x^2+3x^3}{(-2+x)(2+x)}$

f. $\dfrac{23+5x-20x^2-3x^3+3x^4}{(-3+x)(2+x)}$

g. $\dfrac{3+3x-3x^2+x^4}{(-1+x)(1+x)}$

h. $\dfrac{5+15x+15x^2+4x^3}{(1+x)(2+x)}$

3. Find the partial fraction decomposition. Precede with long division if necessary.

a. $\dfrac{5+3x+6x^2}{(1+x)(1+x^2)}$

b. $\dfrac{5-15x-2x^2}{(5+x)(5+x^2)}$

c. $\dfrac{-8-x-x^2}{(-3+x)(1+x^2)}$

d. $\dfrac{22-13x}{(5+x)(4+x^2)}$

e. $\dfrac{5-2x+2x^2}{(-3+x)(2+2x+x^2)}$

f. $\dfrac{-2-2x+x^2}{(-1+x)(2+x^2)}$

g. $\dfrac{-4+x+4x^2}{(-2+x)(3+x^2)}$

Answers

1a. $-4/(x+1)+2/(x-1)-1/(x+5)$ 1b. $1/(x-2)+3/(x-1)+5/(x+3)$ 1c. $2/(x+3)-3/(x+2)-1/(x-5)$ 1d. $4/(x-3)-1/(x-4)+1/(x-1)$ 1e. $-1/(x-6)-2/(x-2)+2/(x+4)$ 1f. $2/(x-4)+1/(x-2)+5/(x+3)$ 1g. $5/(x-1)+1/(x+1)-3/(x+3)$ 1h. $3/(x-5)+2/(x+2)-2/(x+1)$ 1i. $2/(x-3)^2+1/(x-3)-4/(x+1)$ 1j. $-3/(x-1)^2+2/(x-1)+3/(x-2)$ 1k. $2/(x-1)^2+1/(x-1)-4/(x-2)$ 1l. $-5/(x-2)^2+3/(x-2)-5/(x-1)$ 1m. $3/(x+1)^2+1/(x+1)+4/(x-2)$ 1n. $-2/(x+3)^2+2/(x+3)+5/(x+4)$ 1o. $1/(x+4)^2+1/(x+4)-2/(x+3)$ 2a. $3+2/(x+2)-1/(x+1)$ 2b. $5+1/(x-3)+4/(x+1)$ 2c. $4x-2+1/(x+1)+5/(x-2)$ 2d. $2x-1+3/(x+2)+1/(x+4)$ 2e. $3x-2+1/(x-2)-1/(x+2)$ 2f. $3x^2-2+4/(x-3)-1/(x+2)$ 2g. $x^2-2+1/(x+1)+2/(x-1)$ 2h. $4x+3+1/(x+1)-3/(x+2)$ 3a. $(2x+1)/(x^2+1)+4/(x+1)$ 3b. $(-3x)/(x^2+5)+1/(x+5)$ 3c. $(2+x)/(x^2+1)-2/(x-3)$ 3d. $(2-3x)/(x^2+4)+3/(x+5)$ 3e. $(x-1)/(x^2+2x+2)+1/(x-3)$ 3f. $(2x)/(x^2+2)-1/(x-1)$ 3g. $(2x+5)/(x^2+3)+2/(x-2)$