Appendix G Worksheet

Directions: Write out the form of the partial fraction decomposition of the function but do NOT determine the numerical values of the coefficients.

1. $\int \frac{2x\ dx}{(x+3)(3x+1)} = \int \frac{A}{x+3} + \frac{B}{3x+1}\ dx$

2. $\int \frac{1}{x^3+2x^2+x}\ dx = \int \frac{1}{x(x^2+2x+1)}\ dx = \int \frac{1}{x(x+1)^2}\ dx = \int \frac{A}{x} + \frac{B}{x+1} + \frac{C}{(x+1)^2}\ dx$

3. $\int \frac{x^2-x+6}{x^3+3x}\ dx = \int \frac{x^2-x+6}{x(x^2+3)}\ dx = \int \frac{A}{x} + \frac{Bx+C}{x^2+3}\ dx$

4. $\int \frac{x-7\ dx}{(x-4)^2(2x^2+1)^3} = \int \frac{A}{x-4} + \frac{B}{(x-4)^2} + \frac{Cx+D}{2x^2+1} + \frac{Ex+F}{(2x^2+1)^2} + \frac{Gx+H}{(2x^2+1)^3}\ dx$

5. $\int \frac{6\ dx}{x^2(x-1)(4x^2+3)(x^2+1)^2} = \int \frac{A}{x} + \frac{B}{x^2} + \frac{C}{x-1} + \frac{Dx+E}{4x^2+3} + \frac{Fx+G}{x^2+1} + \frac{Hx+I}{(x^2+1)^2}\ dx$

6. $\int \frac{x^4\ dx}{(x^3+x)(x^2-4x+3)} = \int \frac{x^4\ dx}{x(x^2+1)(x-3)(x-1)} = \int \frac{A}{x} + \frac{Bx+C}{x^2+1} + \frac{D}{x-3} + \frac{E}{x-1}\ dx$