function derivativePolynomialCoefficients = PolynomialDifferentiation(polynomialCoefficients, order)

if order >= length(polynomialCoefficients)

derivativePolynomialCoefficients = [];

return;

end

derivativePolynomialCoefficients = polynomialCoefficients;

for i=1:order

derivativePolynomialCoefficients = FirstOrderPolynomialDifferentiation(derivativePolynomialCoefficients);

end

end

function derivativePolynomialCoefficients = FirstOrderPolynomialDifferentiation(polynomialCoefficients)

numberOfPolynomialCoefficients = length(polynomialCoefficients);

numberOfDerivativeCoefficients = numberOfPolynomialCoefficients - 1;

derivativePolynomialCoefficients = zeros(1, numberOfDerivativeCoefficients);

for i=1:numberOfDerivativeCoefficients

derivativePolynomialCoefficients(i) = polynomialCoefficients(i+1) \* i;

end

end