**Question 2**

**syms s F X1 X2 X3;**

**A =** [8\*s^2 + 4\*s + 16 -4\*s - 1 -15; ...

(-4\*s - 1) 3\*s^2 + 20\*s + 1 -16\*s; -15 -16\*s 16\*s + 15];

**B =** [X1; X2; X3];

**C =** [0; F; 0];

**B =** inv(A)\*C;

**X3 =** B(3);

**G1 =** X3 / F;

**display(G1)**

**Console Output**

**G1 =**

(128\*s^3 + 64\*s^2 + 316\*s + 15)**/(**384\*s^5 + 1064\*s^4 + 3476\*s^3 + 165\*s^2)

**Question 3**

**syms s T theta1 theta2 theta3 Jeq1 Jeq2 D Deq K;**

**A =** [Jeq1\*s^2 + K -K 0; -K -K + D\*s -D\*s; ...

0 -D\*s Jeq2\*s^2 + Deq\*s + D\*s];

**B =** [theta1; theta2; theta3];

**C =** [T; 0; 0];

**B =** inv(A)\*C;

**theta1 =** B(1);

**G1 =** theta1 / T;

**display(G1)**

**Console Output**

**G1 =**

(D\*K + Deq\*K - D\*Deq\*s + Jeq2\*K\*s - D\*Jeq2\*s^2)**/**(2\*D\*K^2 + 2\*Deq\*K^2 + 2\*Jeq2\*K^2\*s - D\*Deq\*Jeq1\*s^3 - D\*Jeq1\*Jeq2\*s^4 + D\*Jeq1\*K\*s^2 - D\*Jeq2\*K\*s^2 + Deq\*Jeq1\*K\*s^2 + Jeq1\*Jeq2\*K\*s^3 - D\*Deq\*K\*s)