%Problem 6.41

%ic = Is\*exp(Vbe/Vt)\*(1+(Vce/Va));

Is = 10E-15;

Va = 100;

Vt = 0.025;

%Vbe = 0.65, 0.70, 0.72, 0.73, 0.74;

%Vce = 0 to 15;

for Vce = 0:0.01:15

ic1 = Is\*exp(0.65/Vt)\*(1+(Vce/Va));

ic2 = Is\*exp(0.70/Vt)\*(1+(Vce/Va));

ic3 = Is\*exp(0.72/Vt)\*(1+(Vce/Va));

ic4 = Is\*exp(0.73/Vt)\*(1+(Vce/Va));

ic5 = Is\*exp(0.74/Vt)\*(1+(Vce/Va));

plot(Vce, ic1,'b','LineWidth', 3);

hold on

plot(Vce, ic2,'r','LineWidth', 3);

plot(Vce, ic3,'y','LineWidth', 3);

plot(Vce, ic4,'k','LineWidth', 3);

plot(Vce, ic5,'m','LineWidth', 3);

end

xlabel('Vce [V]');

ylabel('ic [A]');

legend('Vce (Bottom Line) = 0.65V','Vce = 0.70V','Vce = 0.72V', 'Vce = 0.73V', 'Vce (Top Line) = 0.74V');

title('ic vs. Vce');

