

CS557 W09
Homework #7
Due Thursday, 24 Sep 2009

1. The rational Holyoak curve curve is given by

$$\mathbf{P}(t) = \frac{2-2t}{2-t}\mathbf{P}_0 + \frac{3t(t-1)}{(1+t)(2-t)}\mathbf{P}_1 + \frac{2t}{1+t}\mathbf{P}_2$$

- a. Does this curve interpolate the endpoints? Why or why not?
 - b. Is this curve symmetric? Why or why not?
 - c. Is this curve coordinate system independent? Why or why not?
 - d. Does this curve obey the convex hull property? Why or why not?
2. Polar label $f(1, 2, 3, 4)$ has Cartesian coordinates $(2, 3)$ and polar label $f(1, 2, 3, 6)$ has Cartesian coordinates $(6, 1)$. What are the Cartesian coordinates of polar label $f(1, 2, 3, 5)$?
3. Polar label $f(4, 1, 3, 2)$ has Cartesian coordinates $(6, 1)$ and polar label $f(2, 6, 1, 3)$ has Cartesian coordinates $(2, 3)$. What are the Cartesian coordinates of polar label $f(5, 3, 2, 1)$?
4. Polar label $f(1, 2, 3, 4)$ has Cartesian coordinates $(2, 3)$, polar label $f(2, 3, 4, 6)$ has Cartesian coordinates $(6, 1)$, and polar label $f(3, 4, 6, 8)$ has Cartesian coordinates $(8, 4)$. What are the Cartesian coordinates of polar label $f(3, 4, 5, 5)$?