

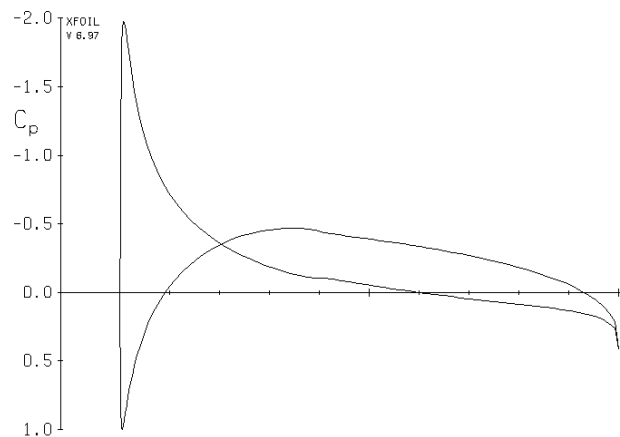
AE 333/707: Tutorial 2.1

1. The thickness distribution (as a fraction of chord) of the NACA 4-digit airfoil family is

$$z_t = 5t(0.2969\sqrt{x} - 0.1260x - 0.3516x^2 + 0.2843x^3 - 0.1015x^4).$$

where t is the maximum thickness of the airfoil as a fraction of the chord, and x is the coordinate along the chord as a function of the chord. What is the thickness of the trailing edge of a NACA 4420 airfoil as a fraction of its chord?

2. Given the C_p vs. x plot below, what is the probable airfoil and angle of attack? More importantly, explain your choice.



- (a) NACA 0012 at 0° angle of attack,
- (b) NACA 0012 at 4° angle of attack,
- (c) NACA 0012 at -4° angle of attack,
- (d) NACA 4412 at 0° angle of attack,
- (e) NACA 4412 at 4° angle of attack,
- (f) NACA 4412 at -4° angle of attack,