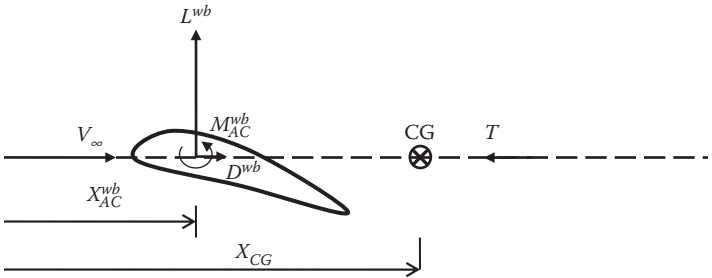

Figure 3.1
Sketch of wing–body showing forces, moments and distances.

Figure 3.2
The Indian Light Combat Aircraft (LCA)—a tailless wing–body configuration. (http://www.defenceforumindia.com; http://3.bp.blogspot.com/_2istSpJf6tk/TOTT-xyHRLI/AAAAAAAAApE/way1ML29vsA/s1600/lca-tejas-9.jpg)

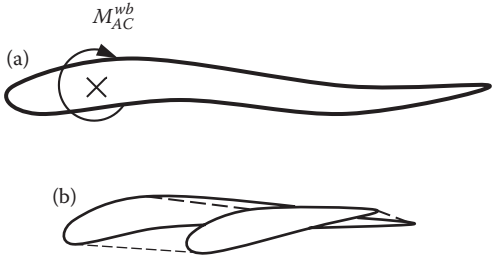

Figure 3.3
(a) An airfoil with reflex camber at the trailing edge and (b) a wing sweep and twist arrangement.

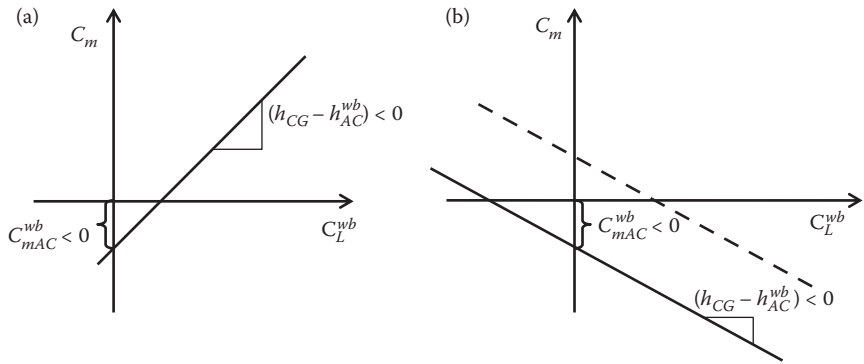

Figure 3.4
Graphs of C_m plotted against C_L^{wb} for two cases: (a) *CG* behind AC^{wb} and (b) *CG* ahead of AC^{wb}.

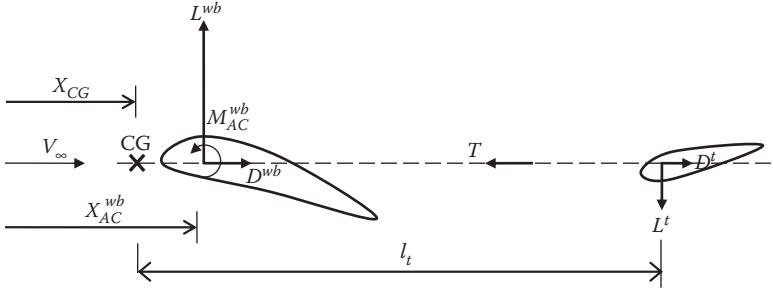

Figure 3.5
Schematic representation of the wing–body plus tail trim and stability.

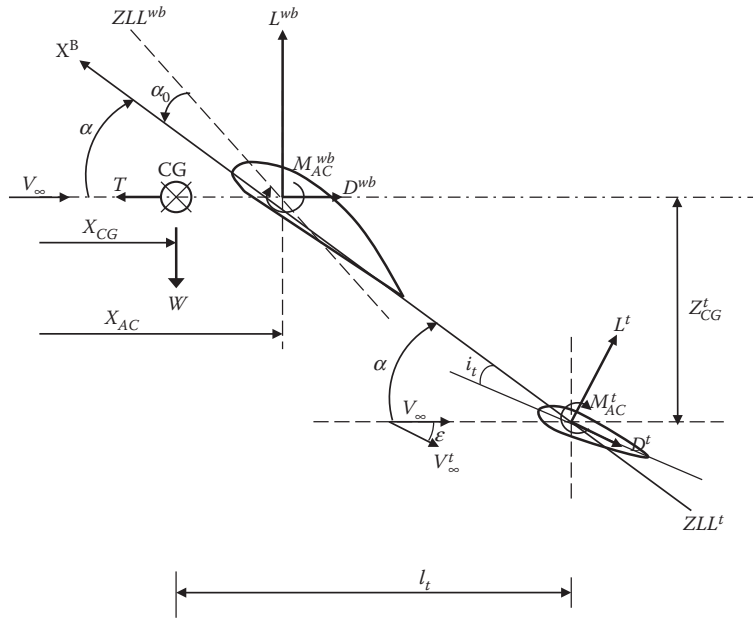

Figure 3.6
Wing–body and horizontal tail configuration.

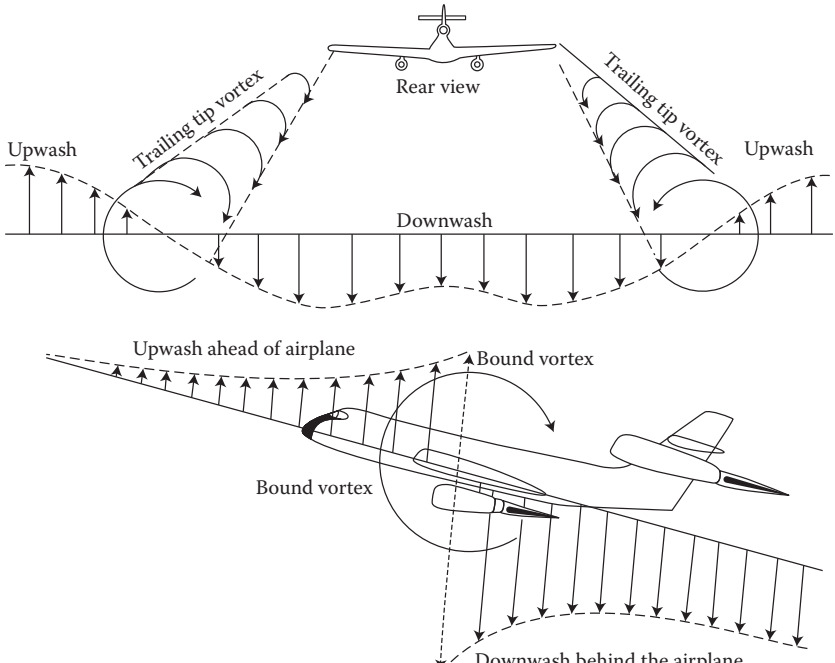

Figure 3.7
Upwash and downwash due to flowfield around wing. (With permission from Gustavo Corujo, http://history.nasa.gov; http://history.nasa.gov/SP-367/f54.htm)

Figure 3.8
Trailing edge vortices emanating from tips of the wing of an airplane seen in the clouds. (http://flyingindian.files.wordpress.com/2010/09/wingtip_vortices_lg.jpg)

Figure 3.9
Example of a T-tail configuration. (www.airliners.net) (http://origin-www.airliners.net/aviation-photos/small/4/1/1/1972114.jpg)

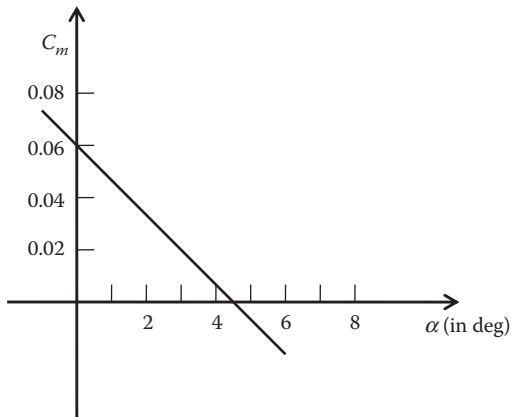

Figure 3.10
Plot of C_m versus α in Example 3.5.

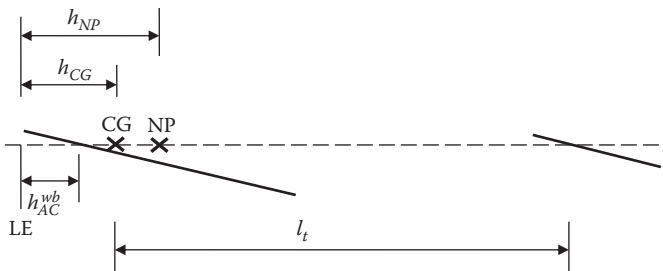

Figure 3.11
Sketch for Example 3.6 ($h_{CG} \sim 0.36$ and $h_{NP} \sim 0.526$).

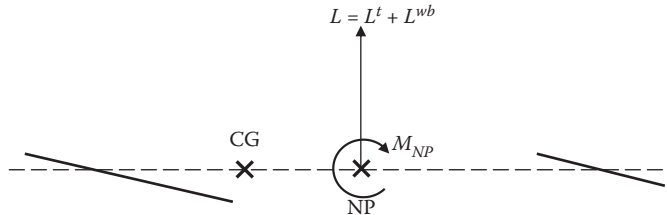

Figure 3.12
Sketch of forces and moment on an airplane displayed at the neutral point.

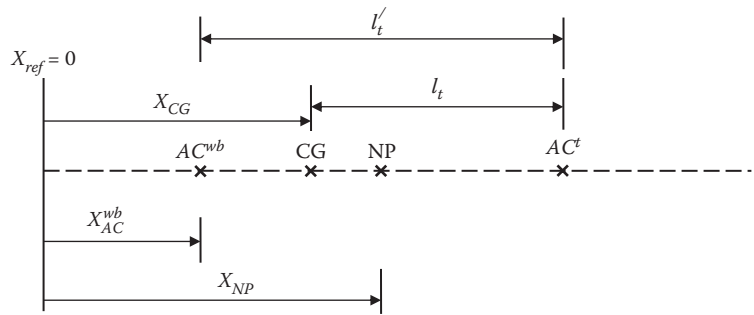

Figure 3.13
Sketch of various locations and distances in case of a wing–body-plus tail.

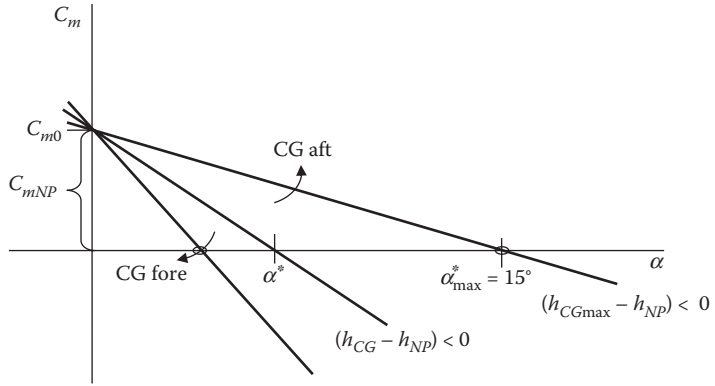

Figure 3.14
Graph of C_m versus α showing the effect of shift in *CG* position, and the practical rearmost *CG* position corresponding to trim at landing angle of attack, here taken to be nominally 15°. (http://www.aerospace-web.org/aircraft/jetliner/b747/b747_21.jpg)

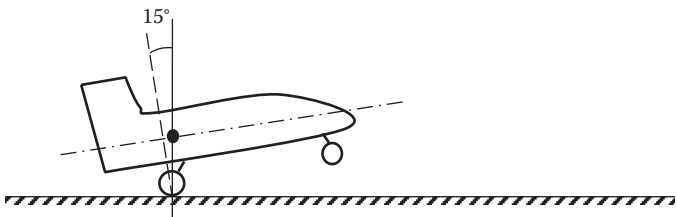

Figure 3.15
Sketch of airplane and rearmost allowable *CG* position during rotation at take-off ground run.

Figure 3.16
Example of a 'tail-sitting' airplane due to improper loads on the ground. (http://www.aerospaceweb.org/aircraft/jetliner/b747/b747_21.jpg)

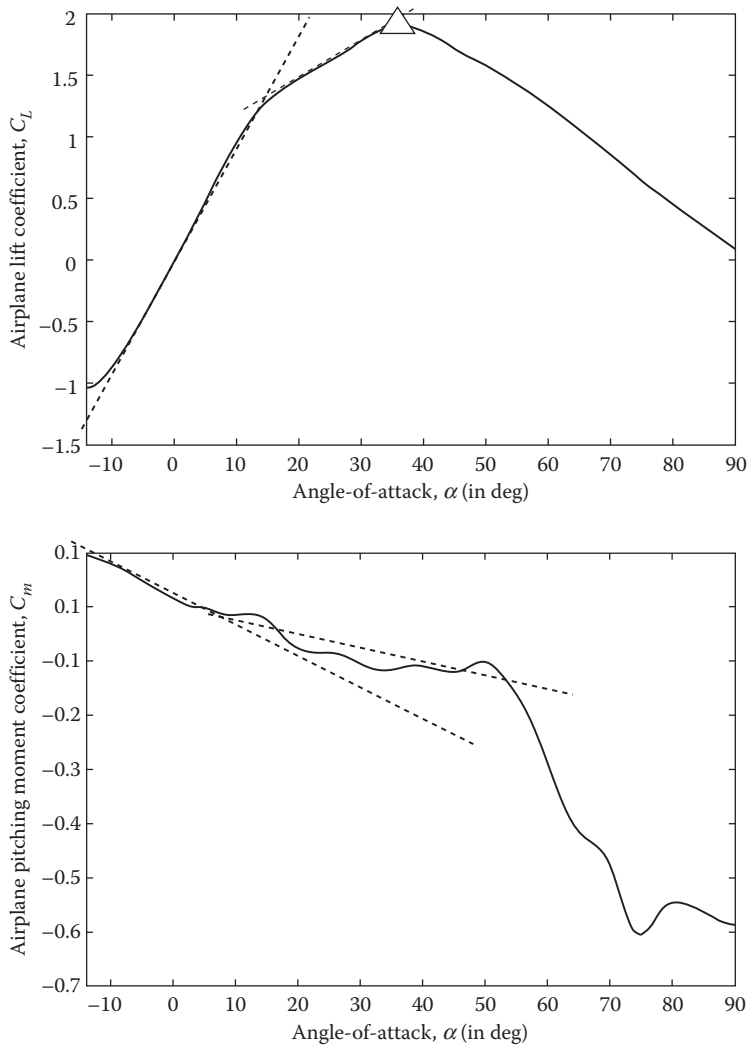

Figure 3.17
Variation of C_L and C_m for the F-18/HARV from –14° to +90° angle of attack (⊠-Stall).

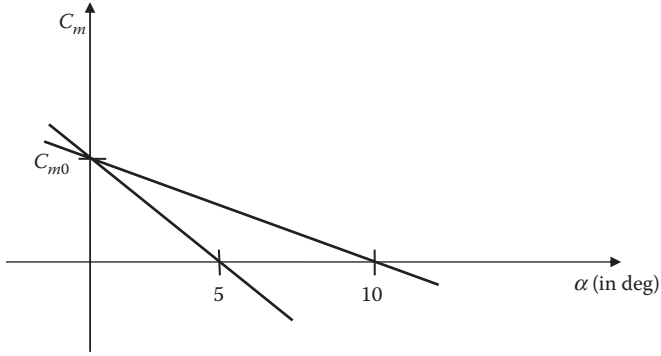

Figure 3.18
C_m versus α curve of a general aviation airplane.

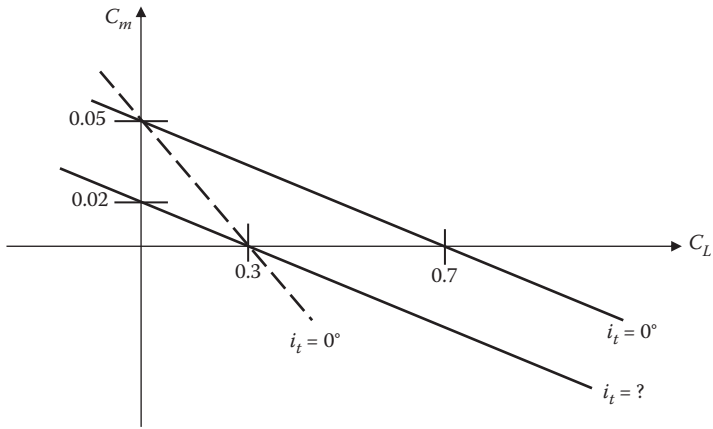

Figure 3.19
C_m–C_L curve for an airplane for different tail setting angles.

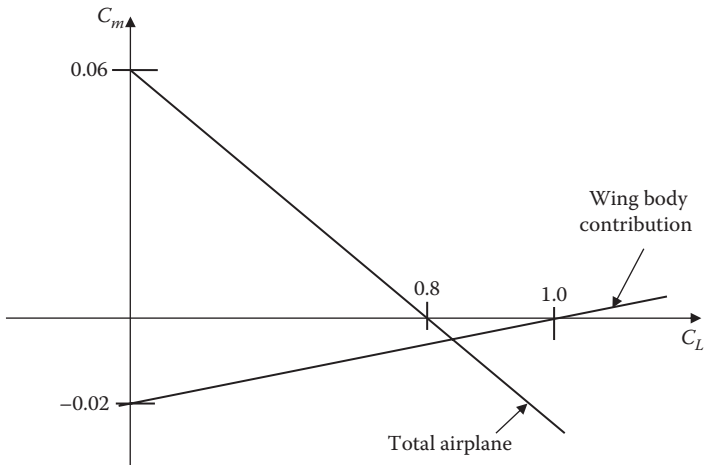

Figure 3.20
C_m–α curve for an airplane with contributions from individual components.

(Source: http://alain.vassel.pages-perso-orange.fr/siecle19.htm)

(Source: http://commons.
wikimedia.org/File:Alphonse
PenaudPlenophore.jpg)