37. We adopt the positive direction choices used in the textbook so that equations such as Eq. 4-22 are directly applicable. The coordinate origin is at ground level directly below the release point. We write $\theta_0 = -37^\circ$ for the angle measured from $+x$, since the angle given in the problem is measured from the $-y$ direction. We note that the initial speed of the projectile is the plane's speed at the moment of release.

(a) We use Eq. 4-22 to find v_0 (SI units are understood).

$$\begin{aligned} y - y_0 &= (v_0 \sin\theta_0)\, t - \frac{1}{2} g t^2 \\ 0 - 730 &= v_0 \sin(-37^\circ)\,(5.00) - \frac{1}{2}(9.8)(5.00)^2 \end{aligned}$$

which yields $v_0 = 202$ m/s.

(b) The horizontal distance traveled is $x = v_0 t \cos\theta_0 = (202)(5.00)\cos -37.0^\circ = 806$ m.

(c) The x component of the velocity (just before impact) is $v_x = v_0 \cos\theta_0 = (202)\cos -37.0^\circ = 161$ m/s.

(d) The y component of the velocity (just before impact) is $v_y = v_0 \sin\theta_0 - gt = (202)\sin(-37^\circ) - (9.80)(5.00) = -171$ m/s.