1.39 ★★ $x = v_o t\cos\theta - \frac{1}{2}gt^2\sin\phi$, $y = v_o t\sin\theta - \frac{1}{2}gt^2\cos\phi$, $z = 0$. When the ball returns to the plane, y is 0, which implies that $t = 2v_o\sin\theta/(g\cos\phi)$. Substituting this time into x and using a couple of trig identities yields the claimed answer for the range R. To find the maximum range, differentiate R with respect to θ and set the derivative equal to zero. This gives $\theta = (\pi - 2\phi)/4$, and substitution into R (plus another trig identity) yields the claimed value of R_{max}.