

64. (a) We compute the coordinate pairs (x, y) from $x = v_0 \cos \theta t$ and $y = v_0 \sin \theta t - \frac{1}{2}gt^2$ for $t = 20$ s and the speeds and angles given in the problem. We obtain (in kilometers)

$$\begin{aligned} (x_A, y_A) &= (10.1, 0.56) & (x_B, y_B) &= (12.1, 1.51) \\ (x_C, y_C) &= (14.3, 2.68) & (x_D, y_D) &= (16.4, 3.99) \end{aligned}$$

and $(x_E, y_E) = (18.5, 5.53)$ which we plot in the next part.

- (b) The vertical (y) and horizontal (x) axes are in kilometers. The graph does not start at the origin. The curve to “fit” the data is not shown, but is easily imagined (forming the “curtain of death”).

