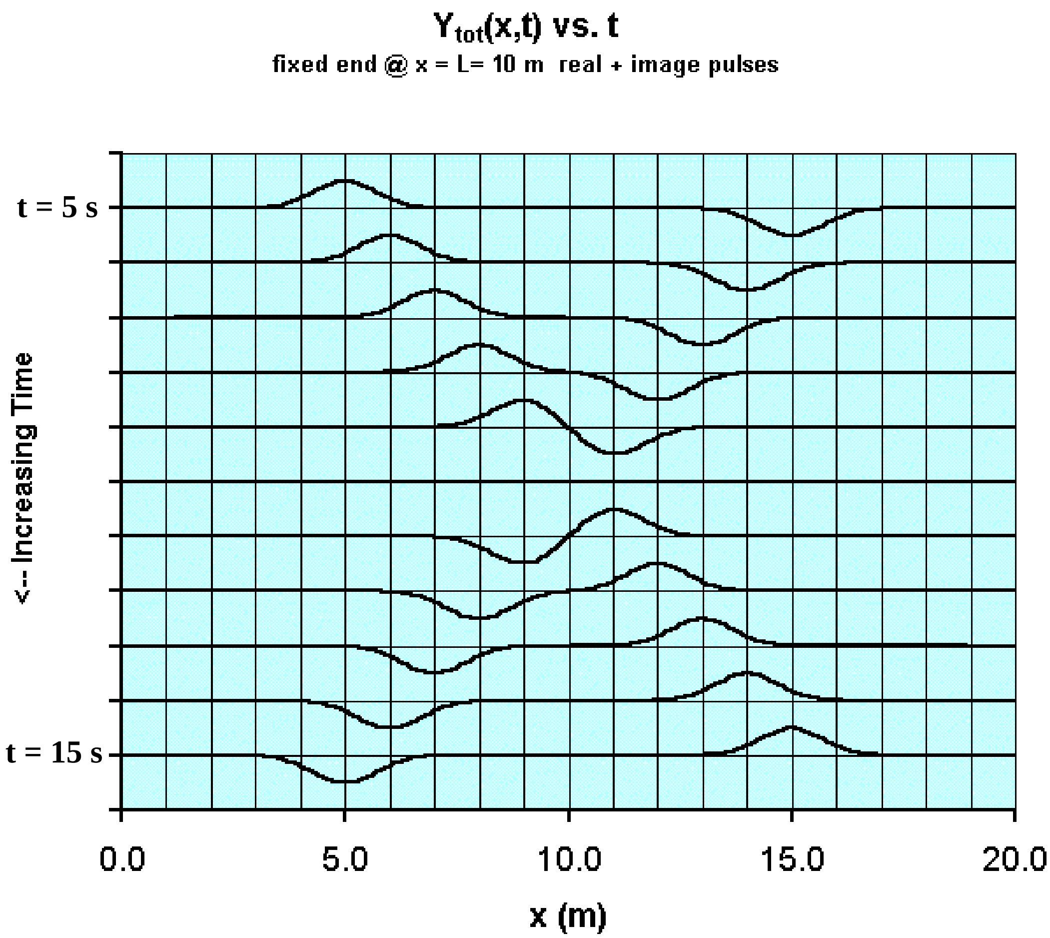
superposed with a polarity-inverted, left-moving transverse traveling wave, which is a "mirror" image of the original wave.

The following plot shows a snapshot time sequence of a right-moving gaussian-shaped transverse traveling wave reflecting from a fixed end, located at $x = L = 10\ m$. The amplitude of the pulse is $y_o = 0.5\ m$, the longitudinal wave speed $v_x = 1.0\ m/sec$. Note that the sequence of (11) time snapshots progress vertically downward in 1 second steps, starting at $t = 5\ sec$, and ending at $t = 15\ sec$. The left-moving image pulse is used to represent the reflection in the physical region ($x \leq L = 10\ m$). Note, for the purposes of comparison with free-end reflection (see below), that the slope, $\partial y_{tot}(x{=}L,t)/\partial x$ is not zero at the fixed end, located at $x = L = 10\ m$.



B.) Reflection of Waves at a Free End

If the end of a taught string, again at $x = L$ is held fixed *longitudinally*, but is freely able to vibrate *transversely*, for example, by attaching a horizontal string to the end support via a massless, frictionless ring, which can slide transversely (*e.g.* up and down) on a rigid, frictionless rod, the free-end *boundary condition* can be stated mathematically as the requirement that the *slope*, $\partial y/\partial x$ of the transverse displacement *at the point* $x = L$ for *any* time t *must* be zero, *i.e.* $\partial y(x{=}L,t)/\partial x = 0$. Operationally, we first *compute* the