

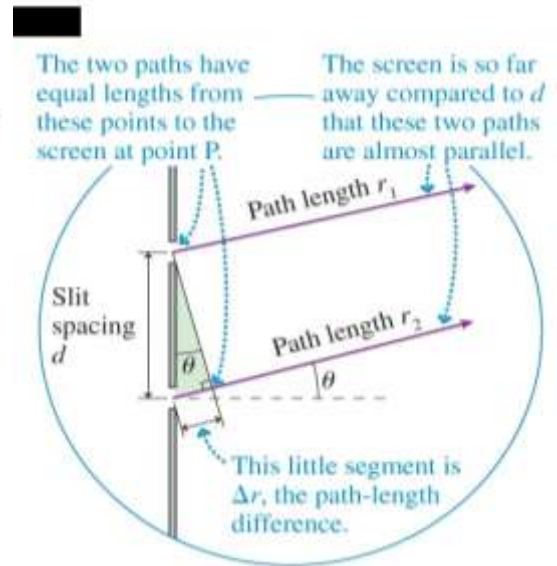
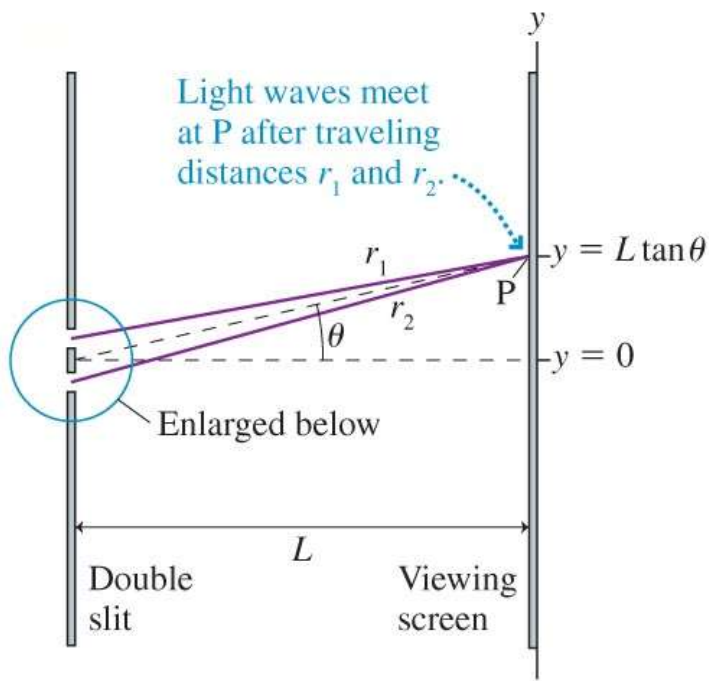
## Sign Conventions

### Mirrors

s = object distance	+	object in front of the mirror
s' = image distance	+	image in front of the mirror – REAL
	-	Image behind the mirror – VIRTUAL
h = object height } h' = image height }	+	points up – upright
	-	points down – inverted
M = magnification	+	upright
	-	inverted
$M = \frac{h'}{h} = \frac{-s'}{s}$		
f = focal length	+	concave/converging
	-	convex/diverging
Mirror Equation:	$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f} = \frac{2}{R}$	

### Lenses

s = object distance	+	object in front of the lens
	-	object behind the lens
s' = image distance	+	image behind the lens – REAL
	-	Image in front of the lens – VIRTUAL
h = object height } h' = image height }	+	points up – upright
	-	points down – inverted
M = magnification	+	upright
	-	inverted
$M = \frac{h'}{h} = \frac{-s'}{s}$		
R <sub>1</sub> & R <sub>2</sub> } R <sub>1</sub> & R <sub>2</sub> } Radii of curvature for the front and back surfaces respectively	+	in back
	-	in front
f = focal length	+	convex/converging
	-	concave/diverging
Thin Lens Equation:	$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$	
Lens Maker's Equation:	$P = \frac{1}{f} = (n - 1) \left( \frac{1}{R_1} - \frac{1}{R_2} \right)$	



Double Slit:  $y_m = \frac{m \lambda L}{d}$

Diffraction grating:  $d \sin \theta = m \lambda$   $y_m = L \tan \theta$

Law of Reflection:  $\theta_i = \theta_r$

Snell's Law:  $n_1 \sin \theta_1 = n_2 \sin \theta_2$

$\sin \theta_c = n_2 / n_1$