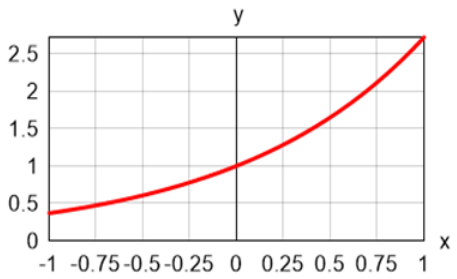
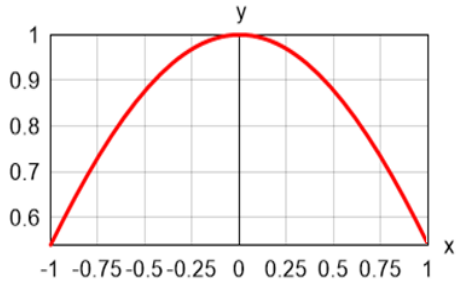
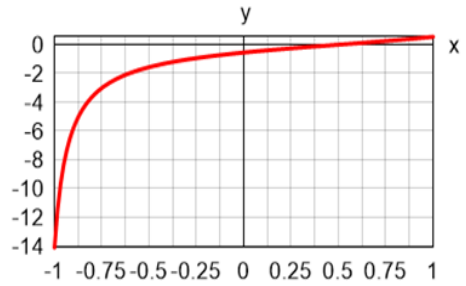
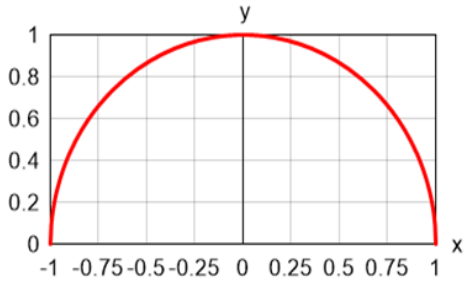
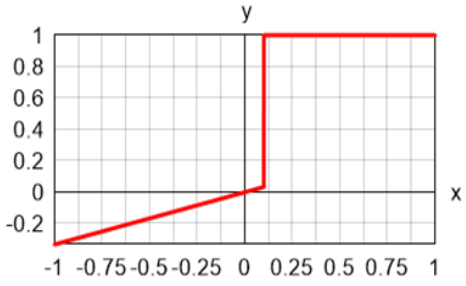
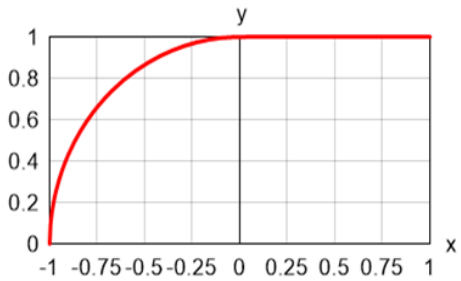
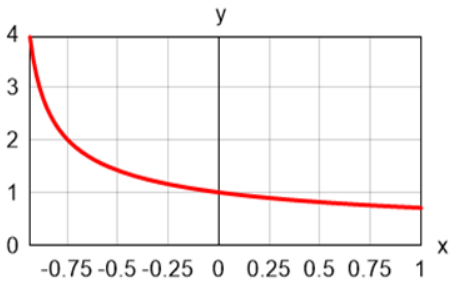
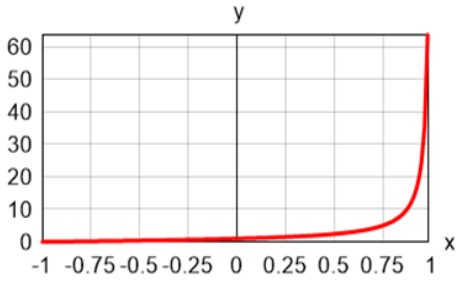
Integration Test Functions

Function	Definite integral	Plot
$f_1(x)=e^x$	$I_1=e-\frac{1}{e}$	
$f_2(x)=\cos(x)$	$I_2=\sin(1)-\sin(-1)$	
$f_3(x)=\tan\left(x-\frac{1}{2}\right)$	$I_3(x)=\ln\left\|\frac{\cos\left(-\frac{3}{2}\right)}{\cos\left(\frac{1}{2}\right)}\right\|$	
$f_4(x)=\sqrt{1-x^2}$	$I_4=\frac{\pi}{2}$	
$f_5(x)=\begin{cases}\frac{x}{3}, \text{if } x<0.1\\ 1, \text{otherwise}\end{cases}$	$I_5=0.9-1.1\cdot\frac{0.9}{6}$	

$f_6(x)=\begin{cases} f_4(x)\,,\ if\ x<0 \\ 1\,,\ otherwise \end{cases}$	$I_6=\frac{\pi}{4}+1$	
$f_7(x)=\frac{1}{\sqrt{x+1}}$	$I_7=2\cdot\sqrt{2}$	
$f_8(x)=\tan\left(\frac{\pi}{4}(x+1)\right)$	$I_8=-\frac{4}{\pi}\ln\left[\cos\left(\frac{\pi}{2}\right)\right]$	

$x \in [-1, 1]$