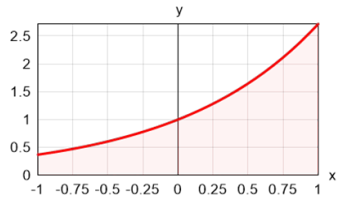
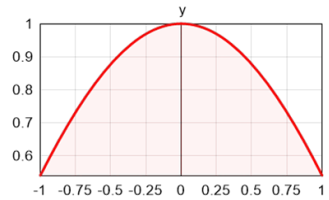
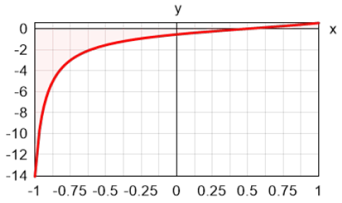
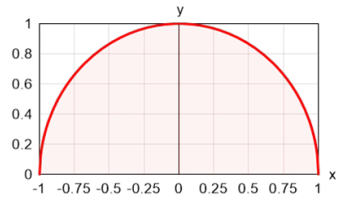
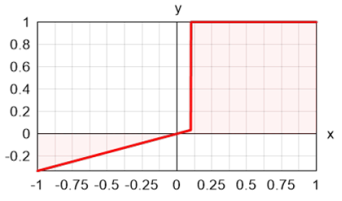
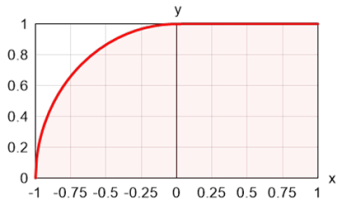
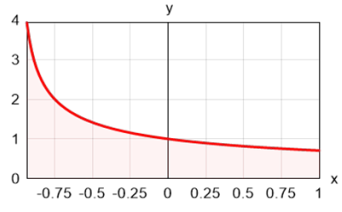
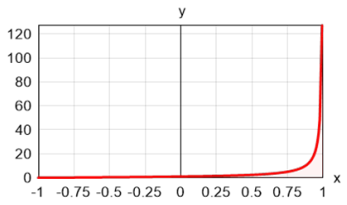
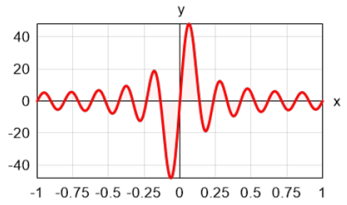
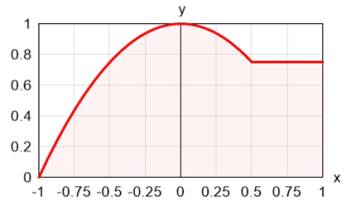
Integration Test Functions

Function	Definite integral	Plot
$f_1(x)=e^x$	$I_1=e-\frac{1}{e}$	
$f_2(x)=\cos(x)$	$I_2=\sin(1)-\sin(-1)$	
$f_3(x)=\tan\left(x-\frac{1}{2}\right)$	$I_3(x)=\ln\left\lvert\frac{\cos\left(-\frac{3}{2}\right)}{\cos\left(\frac{1}{2}\right)}\right\rvert$	
$f_4(x)=\sqrt{1-x^2}$	$I_4=\frac{\pi}{2}$	
$f_5(x)=\begin{cases}\frac{x}{3}, \text{if } x<0.1\\ 1, \text{otherwise}\end{cases}$	$I_5=0.9-1.1\cdot\frac{0.9}{6}$	
$f_6(x)=\begin{cases}f_4(x), \text{if } x<0\\ 1, \text{otherwise}\end{cases}$	$I_6=\frac{\pi}{4}+1$	
$f_7(x)=\frac{1}{\sqrt{x+1}}$	$I_7=2\cdot\sqrt{2}$	

$f_8(x) = \tan\left(\frac{\pi}{4}(x + 0.9999)\right)$	$I_8 = -\frac{4}{\pi} \cdot \ln\left\lvert\frac{\cos\left(1.9999 \cdot \frac{\pi}{4}\right)}{\cos\left(0.0001 \cdot \frac{\pi}{4}\right)}\right\rvert$	
$f_9(x) = \sum_{k=1}^{10} \sin(k \cdot \pi \cdot x) \cdot k$	$I_9 = 0$	
$f_{10}(x) = \begin{cases} \text{if } x < 0.5: & 1 - x^2 \\ \text{else}: & 0.75 \end{cases}$	$I_{10} = 0.5 - 0.5^3/3 +$ $+ 1 - 1^3/3 +$ $+ 0.5 \cdot 0.75 = 1.5$	

$x \in [-1, 1]$