

**10.** Average velocity over  $[1, 1 + h]$  is

$$\begin{aligned} & \frac{2 + \frac{1}{\pi} \sin \pi(1 + h) - \left(2 + \frac{1}{\pi} \sin \pi\right)}{h} \\ &= \frac{\sin(\pi + \pi h)}{\pi h} = \frac{\sin \pi \cos(\pi h) + \cos \pi \sin(\pi h)}{\pi h} \\ &= -\frac{\sin(\pi h)}{\pi h}. \end{aligned}$$

$h$	Avg. vel. on $[1, 1 + h]$
1.0000	0
0.1000	-0.983631643
0.0100	-0.999835515
0.0010	-0.999998355