FINDING the TAYLOR SERIES OF $f(x) = \sin x$ Centered at $a = \pi/2$

Here $a = 2$, $c_n = \dfrac{f^{(n)}(\pi/2)}{n!}$ and $c_n (x-a)^n = \dfrac{f^{(n)}(\pi/2)}{n!}(x-\frac{\pi}{2})^n$

Use k:	n	$f^{(n)}(x)$	$f^{(n)}(\pi/2)$	$c_n (x-a)^n$
$k=0$	0	$\sin x$	$\sin(\pi/2) = 1$	$\frac{1}{0!}(x-\frac{\pi}{2})^0 = 1$
	1	$\cos x$	$\cos(\pi/2) = 0$	———
$k=1$	2	$-\sin x$	$-\sin(\pi/2) = -1$	$\frac{-1}{2!}(x-\frac{\pi}{2})^2$
	3	$-\cos x$	$-\cos(\pi/2) = 0$	———
$k=2$	4	$\sin x$	$\sin(\pi/2) = 1$	$\frac{1}{4!}(x-\frac{\pi}{2})^4$
	5	$\cos x$	$\cos(\pi/2) = 0$	———
$k=3$	6	$-\sin x$	$-\sin(\pi/2) = -1$	$-1/6!\,(x-\frac{\pi}{2})^6$
$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$

$$\sin x = \sum_{k=0}^{\infty} \frac{(-1)^k}{(2k)!}(x - \pi/2)^{2k}$$

It can be shown that the radius of convergence is $R = \infty$.