

Name \_\_\_\_\_

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## STA107H5S Quiz 3B

Consider the random variable  $x$  with probability mass function:

X	$\pi$	0	k	$\pi/2$
p(X)	0.25	0	0.25	h

1. (1 mark) Find h.

$h=0.5$

2. (2 marks) If  $E(X)=\pi$ , find K.

$k = 2\pi$

3. (3 marks) Find  $E(\sin(X))$ . Don't forget that  $\sin(\pi) = \sin(180^\circ) = 0$

$E(\sin(X)) = 1/2$

4. (4 marks) consider the random variable  $X$  with  $E(X) = \mu$  and pdf

$X$	-2	$\mu$	2
$p(X)$	$k$	0.5	$h$

If this is to be a valid probability mass function with the stated expected value, what must  $k$  and  $h$  be?

$k = 1/4 - \mu/8$ ,  $h = 1/4 + \mu/8$ , or some equivalent statement