

236 Quiz 5

February 22, 2011

Name _____

** key **

By printing my name I pledge to uphold the Honor Code.

Work on your own with only your notebook.

1. Fill in the table below for each sequence. The first sequence is done for you as an example. If a sequence fails to be monotonic you can write "not monotonic." If a sequence has no least upper bound you can write "no lub," and similarly for greatest lower bounds. You do not need to show your work. Don't be afraid to *think*.

-1 or -2 per block until the points run out (4 per block)

Sequence	(Eventually? Strictly?) Increasing/Decreasing?	Least Upper Bound? Greatest Lower Bound?	Diverges? Converges? (to what?)
$\left\{ \frac{k}{k+1} \right\}$	always strictly increasing	$lub = 1, glb = \frac{1}{2}$	converges to 1
$\left\{ \frac{k!}{10^k} \right\}$	<i>eventually strictly increasing</i>	<i>lub = NONE (skip glb)</i>	<i>diverges</i>
$\left\{ \frac{k^2}{k!} \right\}$	<i>eventually strictly decreasing</i>	<i>lub = 2 glb = 0</i>	<i>converges to 0</i>
$\left\{ \frac{(k!)^2}{(2k)!} \right\}$	<i>always strictly decreasing</i>	<i>lub = 1/2 glb = 0</i>	<i>converges to 0</i>
$\left\{ \cos\left(\frac{\pi}{2}k\right) \right\}$	<i>not monotonic</i>	<i>lub = 1 glb = -1</i>	<i>diverges</i>
$\left\{ k^{\frac{2}{k}} \right\}$	<i>eventually strictly decreasing</i>	<i>(lub = 3^{2/3}) (skip glb) glb = 1</i>	<i>converges to 1</i>

(k^{1/k})²

FREE