

MTH 132.12 Quiz 1
Friday 21 January 2011

Name:

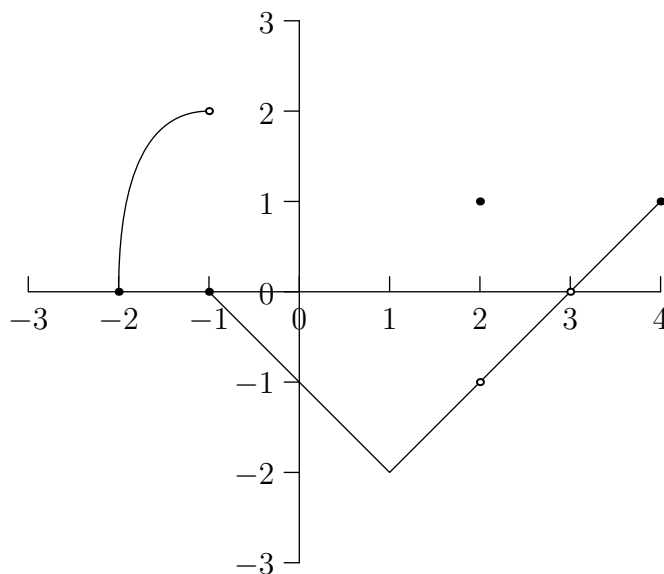
Show *all* your work. Points will be deducted for incomplete work. No calculators are allowed.

1. If $g(x) = \sqrt{x+1}$, find a $\delta > 0$ so that $0 < |x-3| < \delta$ guarantees $|g(x) - 2| < \frac{1}{5}$. You may leave your answer unsimplified.

$$\begin{aligned} |\sqrt{x+1} - 2| &< \frac{1}{5} \\ -\frac{1}{5} &< \sqrt{x+1} - 2 < \frac{1}{5} \\ \frac{9}{5} &< \sqrt{x+1} < \frac{11}{5} \\ \frac{81}{25} &< x+1 < \frac{121}{25} \\ \frac{81}{25} - 4 &< x-3 < \frac{121}{25} - 4 \\ \frac{-19}{25} &< x-3 < \frac{21}{25} \end{aligned}$$

So use $\delta = |\frac{-19}{25}| = \frac{19}{25}$, since this is the smaller of $|\frac{-19}{25}|, |\frac{21}{25}|$.

2. For the function $h(x)$ graphed below, some of the statements below are true and some are false. Circle the true ones.



- (a) $\lim_{x \rightarrow -1^-} h(x) = 0$ **FALSE**
 (b) $\lim_{x \rightarrow 0} h(x) = -1$ **TRUE**
 (c) $h(2) = 1$ **TRUE**
 (d) $\lim_{x \rightarrow 2} h(x) = 1$ **FALSE**
 (e) $\lim_{x \rightarrow 3^+} h(x) = 0$ **TRUE**