

# Math 157 - Quiz 3

September 9, 2015

Name key

Score \_\_\_\_\_

Show all work to receive full credit. Supply explanations when necessary.

1. (3 points) Use a table of values to estimate the following limit. Your table must show function values at six or more points.

$$\lim_{x \rightarrow 4} \frac{12 + x - x^2}{2 - \sqrt{x}}$$

X	$\frac{12+x-x^2}{2-\sqrt{x}}$
3.9	27.426
3.99	27.943
3.999	27.994
4.1	28.576
4.01	28.058
4.001	28.006

IT LOOKS LIKE

$$\lim_{x \rightarrow 4} \frac{12 + x - x^2}{2 - \sqrt{x}} = \boxed{28}$$

2. (2.5 points) Use algebra to find the limit analytically.

$$\lim_{h \rightarrow 0} \frac{(h-2)^2 - 4}{h}$$

$$= \lim_{h \rightarrow 0} \frac{h^2 - 4h + 4 - 4}{h}$$

$$= \lim_{h \rightarrow 0} \frac{h^2 - 4h}{h}$$

$$= \lim_{h \rightarrow 0} h - 4 = \boxed{-4}$$

3. (2.5 points) Use algebra to find the limit analytically.

$$\begin{aligned} & \lim_{x \rightarrow -7} \frac{x^2 + 3x - 28}{2x + 14} \\ &= \lim_{x \rightarrow -7} \frac{(x+7)(x-4)}{2(x+7)} \\ &= \lim_{x \rightarrow -7} \frac{x-4}{2} = \boxed{\frac{-11}{2}} \end{aligned}$$

4. (2 points) Let  $f(x) = 8x^3 - 7x^2 + 3x - 10$ . Compute the limit of  $f(x)$  as  $x \rightarrow -2$ .

$$\begin{aligned} \lim_{x \rightarrow -2} f(x) &= 8(-2)^3 - 7(-2)^2 + 3(-2) - 10 \\ &= -64 - 28 - 6 - 10 \\ &= \boxed{-108} \end{aligned}$$