MTH 132.12 Quiz 3
Friday 11 February 2011

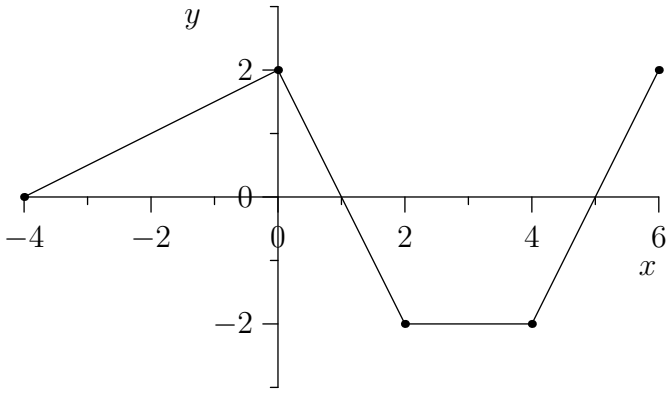
Name:

Show *all* your work. Points will be deducted for incomplete work.

1. Let $f(x) = \frac{x}{x+1}$. Use the definition of the derivative to compute $f'(2)$

$$f'(2) = \lim_{h\to 0} \frac{f(2+h)-f(2)}{h} = \lim_{h\to 0} \frac{\frac{2+h}{2+h+1} - \frac{2}{2+1}}{h}$$
$$= \lim_{h\to 0} \frac{\frac{3(2+h)-2(3+h)}{3(3+h)}}{h}$$
$$= \lim_{h\to 0} \frac{\frac{h}{3(3+h)}}{h} = \lim_{h\to 0} \frac{1}{3(3+h)} = \frac{1}{9}$$

2. The following is the graph of $y = g(x)$.



(a) Where is g continuous?

$[-4, 6]$

(b) Where is g differentiable?

Everywhere in $[-4, 6]$ except $x = 0, x = 2, x = 4$

(c) Sketch the graph of $y = g'(x)$ on the axes below.