Quiz 2

Key

Show *all* your work. No credit is given without reasonable supporting work. There are *two* sides to this quiz.

1. (WebHW2 #11) Let f be the piecewise defined function whose graph is shown below on the right:

   (a) (WebHW#7) [1] Approximate $f(2)$ and $f(-1)$.

   $f(2) \approx 5$

   $f(-1) \approx -5$

   (b) (Transformation Wks #5e) [1] For what x value(s) does $f(x) = 4$?

   if $x = 0$ then $f(x) = 4$

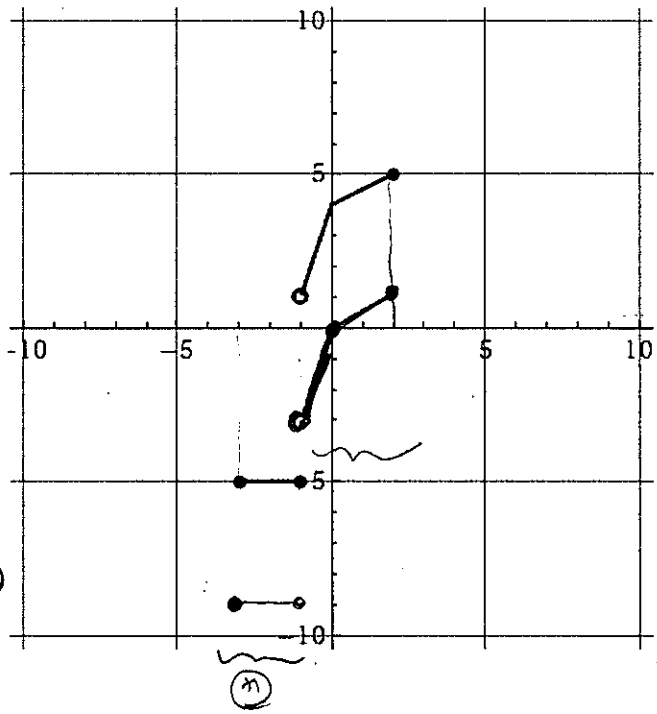
   (c) (WebHW #11) [1] What is the domain of f?

   $[-3, 2]$

   #'s +.5

   endpts +.5

   (d) (Transformation Wks #5c) [2] Draw the graph of $g(x) = f(x) - 4$.



(1)

Def'n +1 { The graph of g looks like the graph of f but shifted down 4 units

shift +.5 unit

2. Let $f(x) = \dfrac{2}{x}$ and $g(x) = \dfrac{4}{x+4}$ for the following questions.

(a) (§2.1 #15) [2] Find $g(a-1)$ and simplify.

$g(a-1) = \dfrac{4}{(a-1)+4} = \dfrac{4}{a+3}$

comp +1.5 (+1) simplify +.5

(b) (§2.7 #5) [2] Find fg and the domain of fg

$(f \cdot g)(x) = f(x) \cdot g(x) = \dfrac{2}{x} \cdot \dfrac{4}{x+4} = \dfrac{8}{x(x+4)}$ (+1)

Domain: den can't equal zero (+.5)

$x(x+4) \neq 0$ (+.5)

$\Rightarrow x \neq 0$ and $x+4 \neq 0$ So $x \neq 0$ and $x \neq -4$

or

$(-\infty, -4) \cup (-4, 0) \cup (0, \infty)$

(c) (WebHW3 #7) [1] Find $(f \circ g)(3)$ and simplify.

$(f \circ g)(3) = f(g(3))$

$= f\left(\dfrac{4}{3+4}\right) = f\left(\dfrac{4}{7}\right)$ (+.5)

$= \dfrac{2}{\frac{4}{7}} = 2 \div \frac{4}{7} = 2 \cdot \frac{7}{4} = \frac{14}{4} = \frac{7}{2}$ (+.5)