Quiz 2

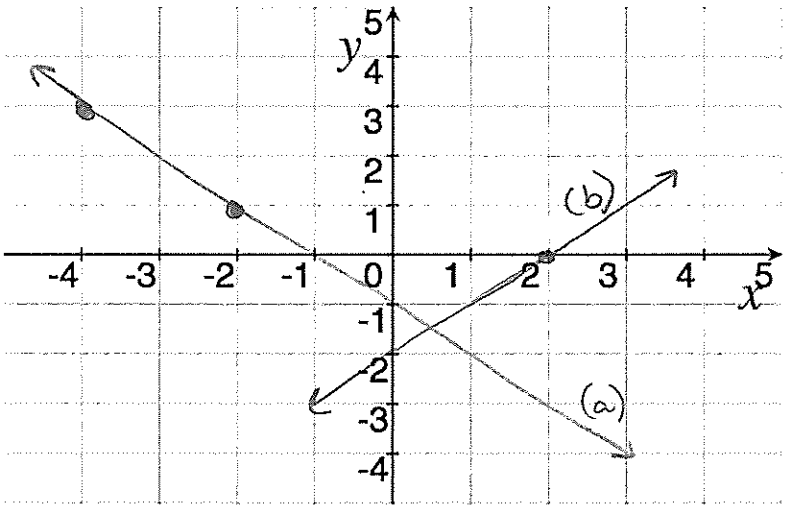
Key

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

1. (Line Wks #13c)

   (a) [1] Draw a line that passes through $(-2, 1)$ and $(-4, 3)$ on the graph provided.

   (b) [3] Find the equation of a line perpendicular to the line that passes through $(-2, 1)$ and $(-4, 3)$ but passes through $(2, 0)$.



(+.5) slope of line in (a) $= \frac{\text{rise}}{\text{run}} = \frac{3-1}{-4+2} = \frac{+2}{-2} = -1$

(+.5) $\Rightarrow$ slope of perpendicular line is $\frac{1}{1}$ (opposite reciprocal)

passes thru (2,0)

so $0 = 1(2) + b$

$\Rightarrow 0 = 2 + b$

$-2 = b$

so $y = 1x - 2$

or

passes thru (2,0)

$y - 0 = 1(x - 2)$

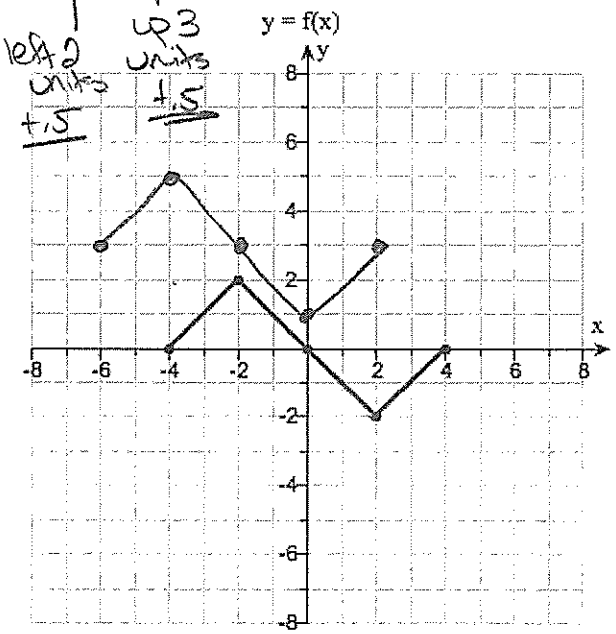
(+1.5) algebra

(+1) plug in point

(+.5) eq of line

2. [2] (WebHW3 #19) Given the piece-wise defined function f shown below. Graph $g(x) = f(x+2)+3$.

left 2 units +.5 ↑ up 3 units +1.5 ↑



horz shift (+1)
vert shift (+1)

3. (§1.6 #20) Let $f(x) = \frac{x^2+x-6}{x^2-9}$ and $g(x) = x^2\sqrt{9-4x}$

(a) [2] Find the rule for $f+g$.

$(f+g)(x) = f(x)+g(x) = \frac{x^2+x-6}{x^2-9} + x^2\sqrt{9-4x}$ (+1.5) (+1.5)

(b) [3] Find the rule for $g \circ f$.

$(g \circ f)(x) = g(f(x)) = g\left(\frac{x^2+x-6}{x^2-9}\right)$ (+1.5)

$= \left(\frac{x^2+x-6}{x^2-9}\right)^2\sqrt{9-4\left(\frac{x^2+x-6}{x^2-9}\right)}$ (+1.5) (+1.5)

(+.5) Composition
(+1.5) notation
(+.5) got it