

Quiz 6

1 October 2009

Show all work to support your solutions. Be sure to check your solutions.

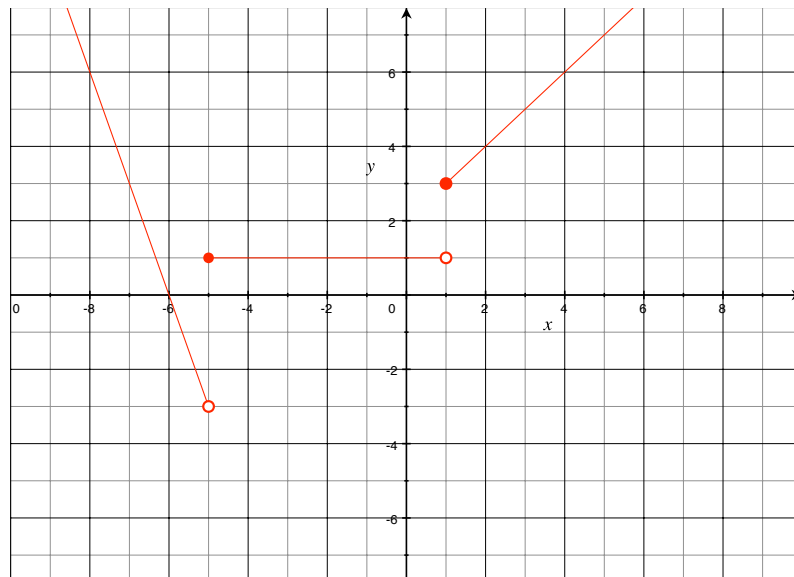
1. Consider the function f defined below.

$$f(x) := \begin{cases} -3x - 18, & x < -5, \\ 1, & -5 \leq x < 1, \\ x + 2, & 1 \leq x \end{cases}$$

(a) (1 Point) Evaluate $f(2)$.

$$f(2) = (2) + 2 = 4$$

(b) (3 Points) Graph f on the axes provided.



(c) (1 Point) On what interval(s) is f decreasing? $(-\infty, -5)$

2. Consider the functions defined below.

$$g(x) := 3x - 2, \quad h(x) := x^2 + 5$$

(a) (3 Points) Provide a reduced formula for $(g \cdot h)(x)$.

$$(g \cdot h)(x) = g(x) \cdot h(x) = (3x - 2)(x^2 + 5) = 3x^3 - 2x^2 + 15x - 10$$

(b) (2 Points) Evaluate $(g \circ h)(-1)$.

$$h(-1) = (-1)^2 + 5 = 1 + 5 = 6$$

$$g(6) = 3(6) - 2 = 18 - 2 = 16$$

$$(g \circ h)(-1) = g(h(-1)) = g(6) = 16$$