

SOLUTIONS

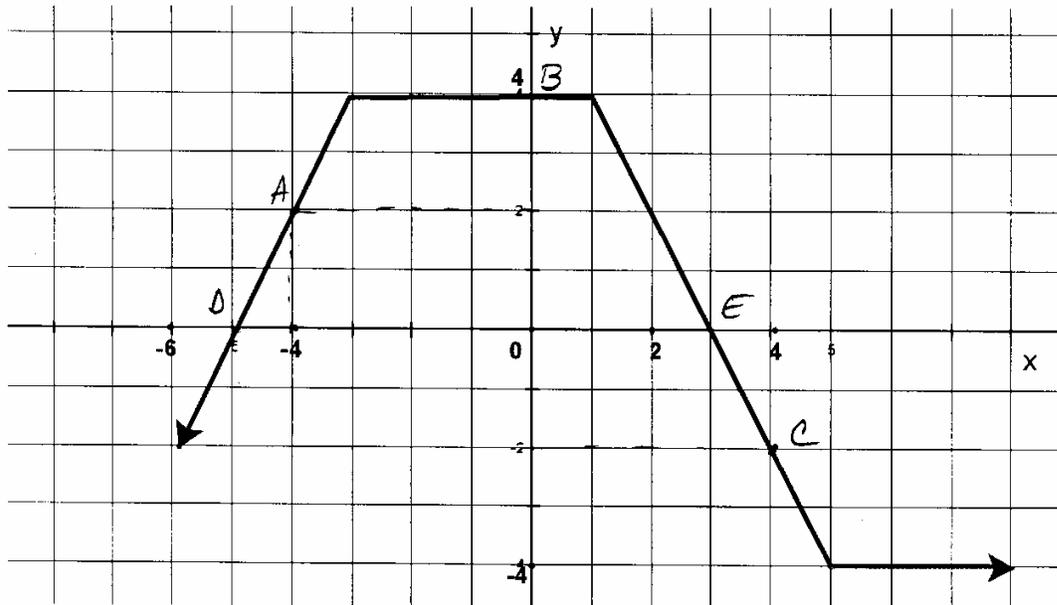
Math 71 Spring 2006

QUIZ #2 @ 15 points

Name: _____

Write in a neat and organized fashion. You should use a pencil. For an exercise to be complete there needs to be a detailed solution to the problem. Do not just write down an answer. No proof, no credit given.

1. Answer the following questions:



a) Is y a function of x ? Explain.

Yes, the graph passes the vertical line test.

b) What is the domain of the function?

$$x \in \mathbb{R}$$

c) What is the range of the function?

$$y \in (-\infty, 4]$$

d) If $y = f(x)$, find:

$$\boxed{f(-4) = 2} \text{ because when } x = -4 \text{ } y = 2 \text{ (A)}$$

$$\boxed{f(0) = 4} \text{ because when } x = 0 \text{ } y = 4 \text{ (B)}$$

$$\boxed{f(4) = -2} \text{ because when } x = 4 \text{ } y = -2 \text{ (C)}$$

e) Solve $f(x) = 0$

$$x = ? \text{ when } y = 0$$

$$\text{if } y = 0, \boxed{x = -5} \text{ and } \boxed{x = 3} \text{ (see D and E)}$$

$$2. f(x) = \frac{2x-3}{x-4}$$

a) What is the domain of the function?

Condition: $x-4 \neq 0 \Rightarrow x \neq 4$
 So, the domain is $\boxed{(-\infty, 4) \cup (4, \infty)}$

b) Find $f(0)$

$$f(0) = \frac{2 \cdot 0 - 3}{0 - 4}$$

$$= \frac{-3}{-4} = \frac{3}{4}$$

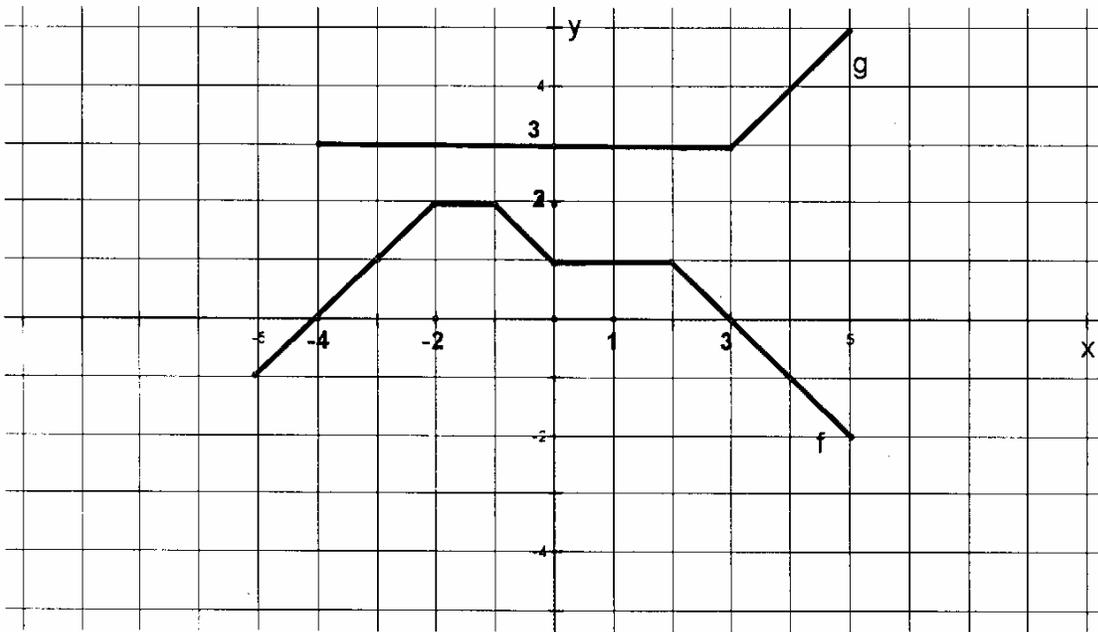
$$\boxed{f(0) = \frac{3}{4}}$$

c) Find $f(a+h)$

$$f(a+h) = \frac{2(a+h)-3}{a+h-4}$$

$$\boxed{f(a+h) = \frac{2a+2h-3}{a+h-4}}$$

3. Use the graphs of f and g to answer the following:



$$a) (f+g)(-4) = f(-4) + g(-4)$$

$$= 0 + 3$$

$$= \boxed{3}$$

$$b) (fg)(3) = f(3)g(3)$$

$$= 0 \cdot 3$$

$$= \boxed{0}$$

$$c) \left(\frac{f}{g}\right)(1) = \frac{f(1)}{g(1)}$$

$$= \frac{1}{3}$$

$$= \boxed{\frac{1}{3}}$$

$$d) (f-g)(2) = f(2) - g(2)$$

$$= 1 - 3$$

$$= \boxed{-2}$$