

Exam

Name \_\_\_\_\_

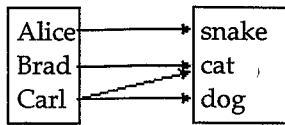
Exam 1a Math 121 Fall 2011

**MULTIPLE CHOICE.** Choose the one alternative that best completes the statement or answers the question.

**Determine whether the relation represents a function. If it is a function, state the domain and range.**

1)

1) \_\_\_\_\_



- A) function  
domain: {snake, cat, dog}  
range: {Alice, Brad, Carl}
- B) function  
domain: {Alice, Brad, Carl}  
range: {snake, cat, dog}
- C) not a function

**SHORT ANSWER.** Write the word or phrase that best completes each statement or answers the question.

**Determine the average rate of change for the function.**

2)  $f(x) = \frac{3}{5}x + 3$

2) \_\_\_\_\_

**Determine, without graphing, whether the given quadratic function has a maximum value or a minimum value and then find that value.**

3)  $f(x) = x^2 + 2x - 2$

3) \_\_\_\_\_

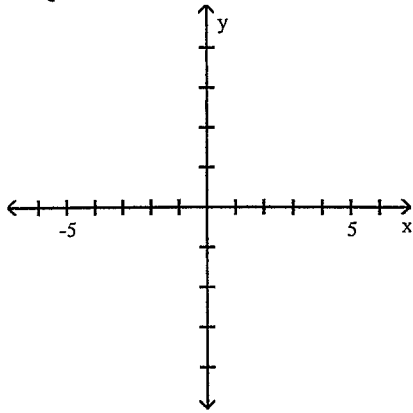
MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Graph the function.

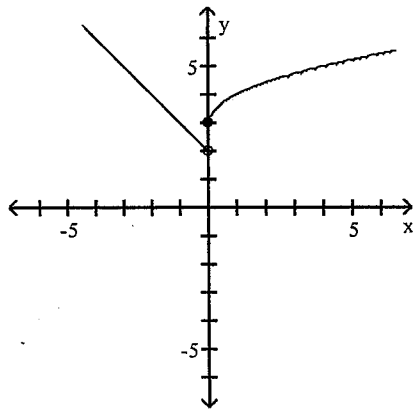
4)

4) \_\_\_\_\_

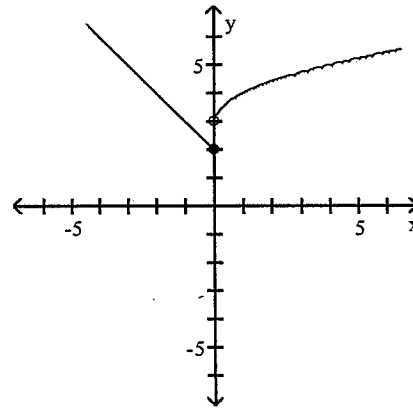
$$f(x) = \begin{cases} -x + 2 & x < 0 \\ \sqrt{x} + 3 & x \geq 0 \end{cases}$$



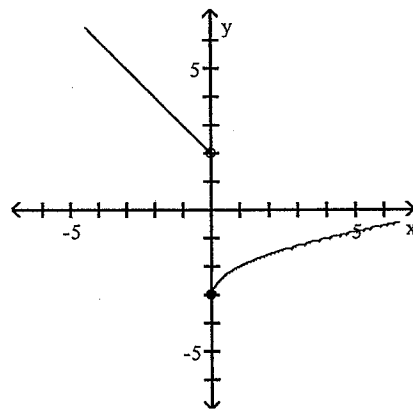
A)



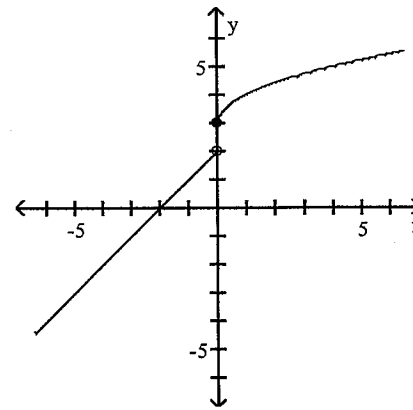
B)



C)



D)



**SHORT ANSWER.** Write the word or phrase that best completes each statement or answers the question.

Give the equation of the horizontal asymptote, if any, of the function.

5)  $f(x) = \frac{x^2 - 2}{4x - x^4}$

5) \_\_\_\_\_

Find the vertical asymptotes of the rational function.

6)  $f(x) = \frac{x - 4}{16x - x^3}$

6) \_\_\_\_\_

Solve the inequality.

7)  $x + \frac{18}{x} < 9$

7) \_\_\_\_\_

List the potential rational zeros of the polynomial function. Do not find the zeros.

8)  $f(x) = 5x^4 - x^2 + 3$

8) \_\_\_\_\_

Information is given about a polynomial  $f(x)$  whose coefficients are real numbers. Find the remaining zeros of  $f$ .

9) Degree 6; zeros:  $-6, 4, 6 - 5i, -4 + i$

9) \_\_\_\_\_

The function  $f$  is one-to-one. Find its inverse.

$$10) f(x) = \frac{4}{x+4}$$

10) \_\_\_\_\_

Solve the equation in the real number system.

$$11) 2x^3 - x^2 - 14x + 7 = 0$$

11) \_\_\_\_\_

Answer Key

Testname: EXAM\_1A\_FALL\_2011

1) C

2)  $\frac{3}{5}$

3) minimum; -3

4) A

5)  $y = 0$

6)  $x = 0, x = -4$

7)  $(-\infty, 0)$  or  $(3, 6)$

8)  $\pm \frac{1}{5}, \pm \frac{3}{5}, \pm 1, \pm 3$

9)  $6 + 5i, -4 - i$

10)  $f^{-1}(x) = \frac{-4x + 4}{x}$