

MATH 111 - Exam 1 - Summer 2011 - Section 1

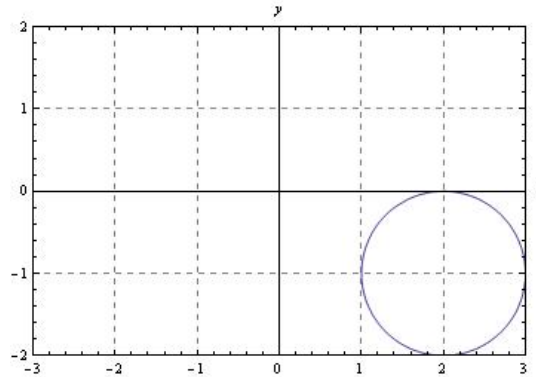
No books, notes, or calculators allowed.

Do NOT write on this exam.

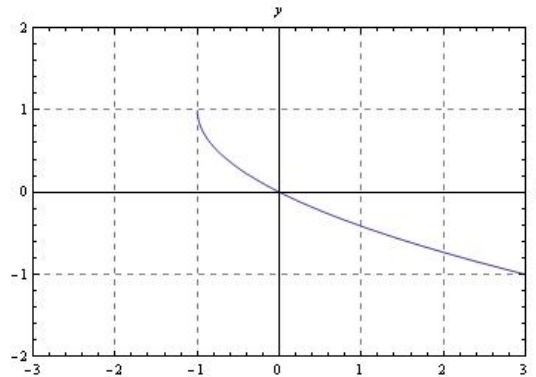
There is no time limit.

For problems 1-4 choose the equation that yields the given graph.

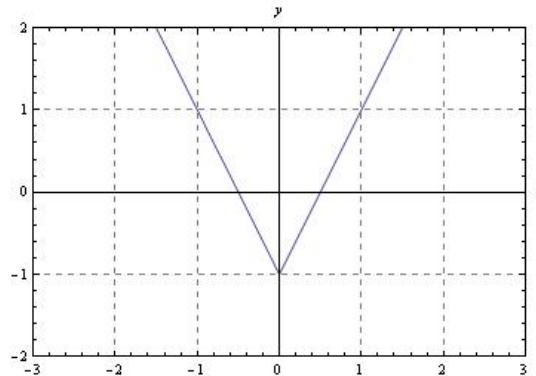
1. (a) $(x - 1)^2 + y^2 = 1$
(b) $(x - 1)^2 + (y - 2)^2 = 1$
(c) $(x + 1)^2 + (y + 2)^2 = 1$
(d) $(x - 2)^2 + (y + 1)^2 = 1$
(e) $(x - 2)^2 + (y - 1)^2 = 1$
(f) $(x + 2)^2 + (y - 1)^2 = 1$



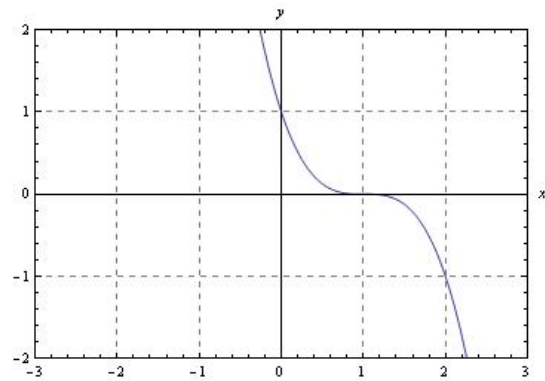
2. (a) $1 - \sqrt{x}$
(b) $1 + \sqrt{x + 1}$
(c) $1 + \sqrt{x - 1}$
(d) $1 + \sqrt{-x + 1}$
(e) $-1 + \sqrt{-x + 1}$
(f) $1 - \sqrt{x + 1}$



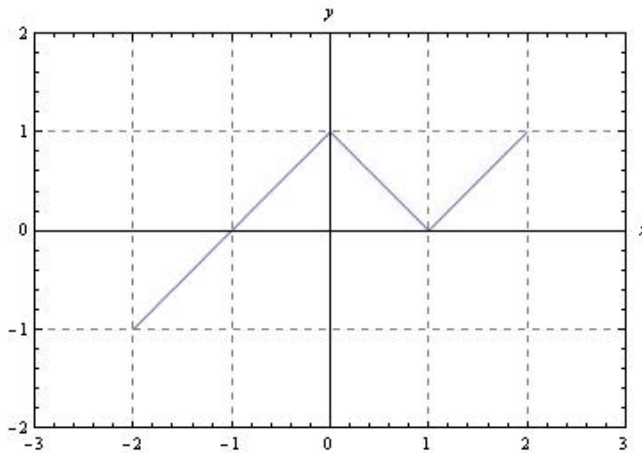
3. (a) $y = 2|x| - 1$
(b) $y = \frac{1}{2}|x| - 1$
(c) $y = \frac{1}{2}|x| + 1$
(d) $y = |x| - 1$
(e) $y = |x| + 1$
(f) $y = -2|x| - 1$



4. (a) $y = (-x + 1)^3$
 (b) $y = (x + 1)^3$
 (c) $y = (x - 1)^3$
 (d) $y = (-x - 1)^3$
 (e) $y = x^3$
 (f) $y = x^3 + 1$



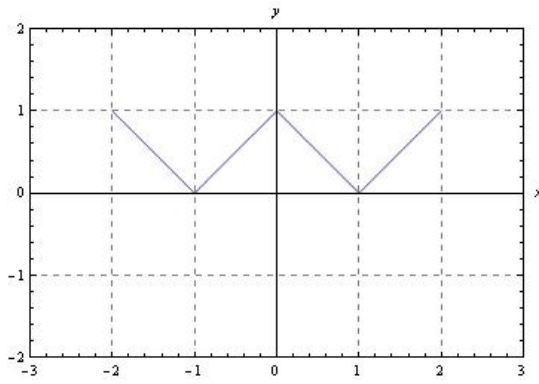
For problems 5-12, refer to the graph of $y = f(x)$:



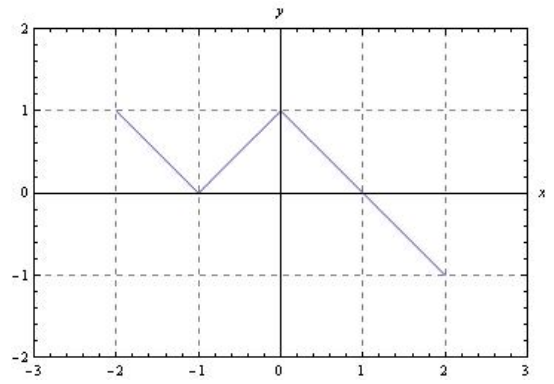
Choose the graph for each of the following functions. An answer may be used more than once.

5. $y = 2f(x)$
 6. $y = f(x) + 1$
 7. $y = f(-x)$
 8. $y = -f(x)$
 9. $y = -f(-x)$
 10. $y = f(x + 1)$
 11. $y = f(\frac{3}{2}x)$
 12. $y = |f(x)|$

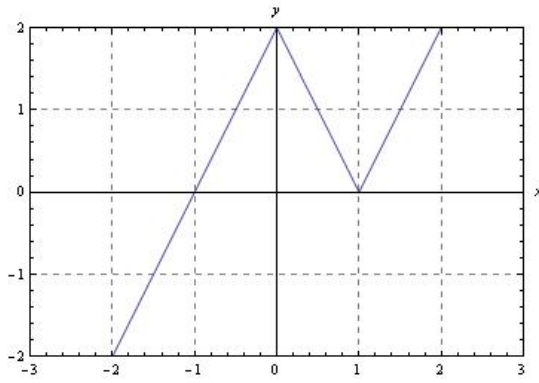
(a)



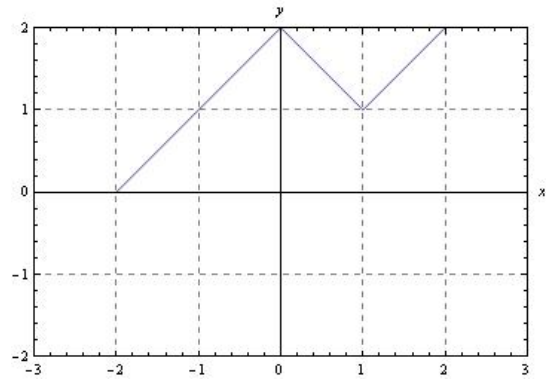
(b)



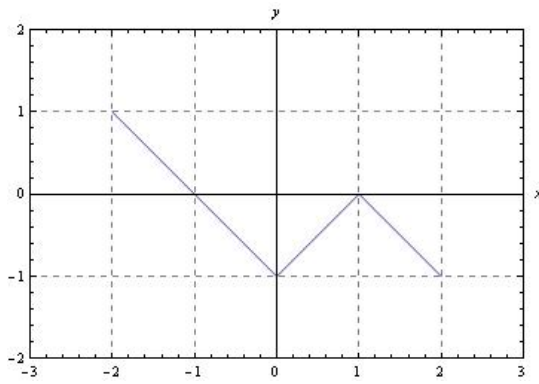
(c)



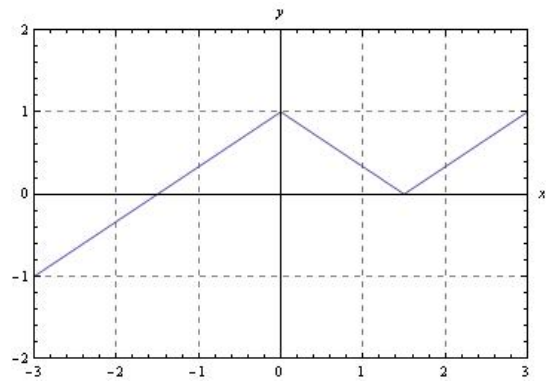
(d)



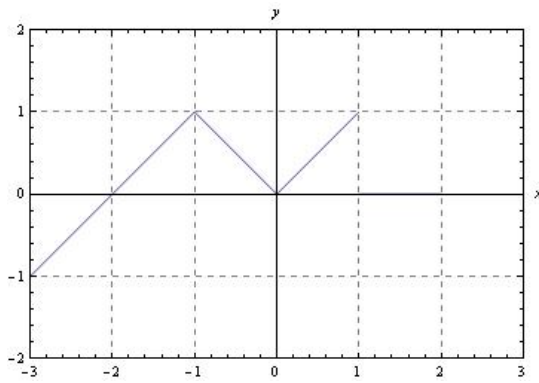
(e)



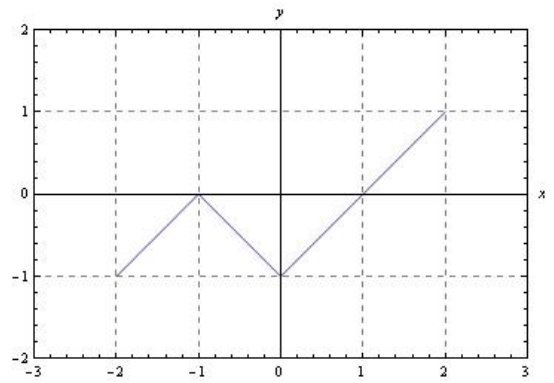
(f)



(g)



(h)



For problems 13-15, refer to the function f given by $\{(-1,1),(2,-3),(0,1),(-3,4),(-10,7)\}$.

13. Find the inverse of f : f^{-1} .

- (a) $\{(1,-1),(-3,2),(1,0),(4,-3),(7,-10)\}$
- (b) $\{(1,-1),(2,-3),(0,1),(-3,2),(7,-10)\}$
- (c) $\{(-1,1),(2,-3),(1,0),(-3,2),(-10,7)\}$
- (d) $\{(1,1),(2,-3),(0,1),(-3,2),(-10,7)\}$

- (e) $\{(1,1),(-3,2),(0,1),(-3,2),(7,10)\}$
- (f) f has no inverse because it is not a 1-to-1 function.

14. Find the domain of f .

- (a) $\{1,2,3,4\}$
- (b) $\{-1,2,0,-3,-10\}$
- (c) $\{-3,7\}$

- (d) $\{-3,-1,0,1,2,4,7,-10\}$
- (e) $\{1,-3,4,7\}$
- (f) $\{0\}$

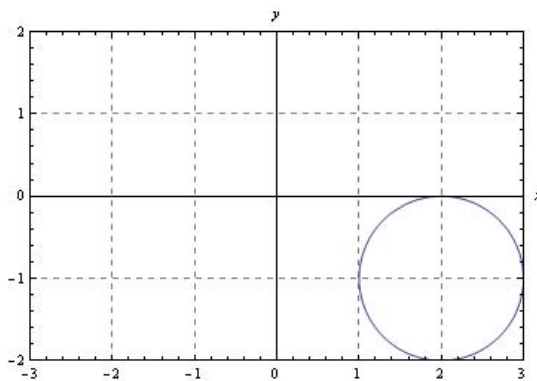
15. Find the range of f .

- (a) $\{1,2,3,4\}$
- (b) $\{-1,2,0,-3,-10\}$
- (c) $\{-3,7\}$

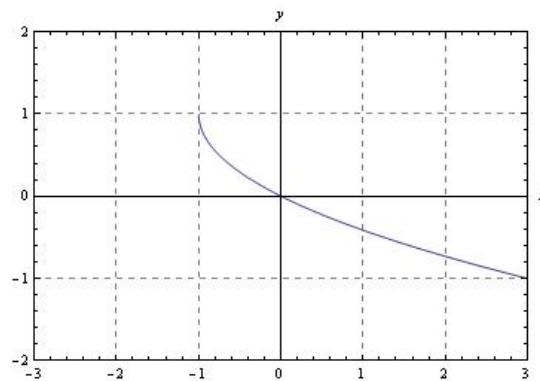
- (d) $\{-3,-1,0,1,2,4,7,-10\}$
- (e) $\{1,-3,4,7\}$
- (f) $\{0\}$

16. Which of the following is a graph of a 1-to-1 function?

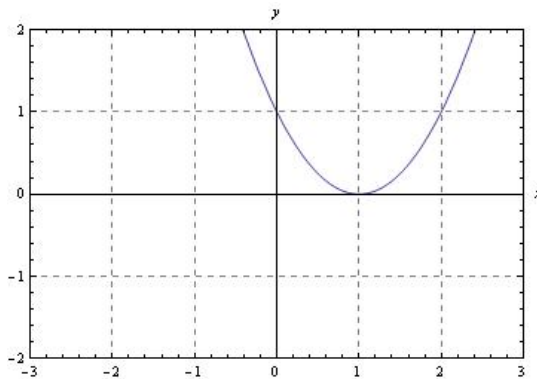
(a)



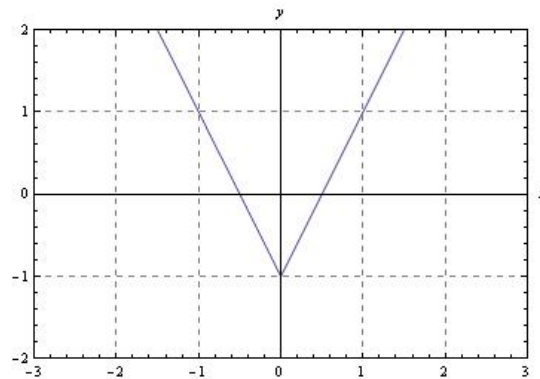
(b)



(c)

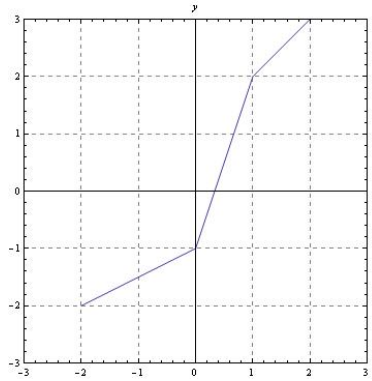


(d)

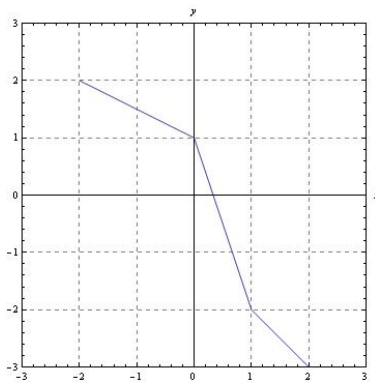


(e) None of the above are graphs of 1-to-1 functions.

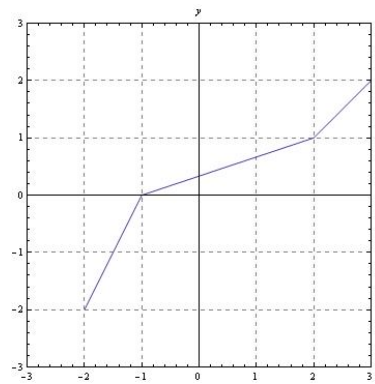
17. The graph of a 1-to-1 function f is shown below. Find the graph of f^{-1} .



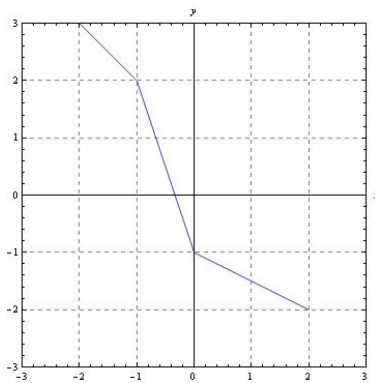
(a)



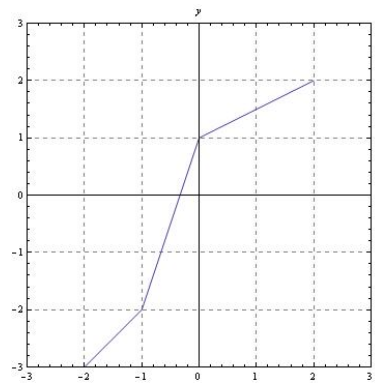
(b)



(c)



(d)



18. Find the inverse of the one-to-one function $f(x) = \frac{x+1}{x+2}$.

(a) $f^{-1}(x) = \frac{x+2}{x+1}$

(c) $f^{-1}(x) = \frac{-x+2}{x-1}$

(e) $f^{-1}(x) = \frac{x+2}{2x-1}$

(b) $f^{-1}(x) = \frac{x-2}{x-1}$

(d) $f^{-1}(x) = \frac{-2x+1}{x-1}$

(f) $f^{-1}(x) = \frac{x+2}{x-1}$

19. Find the domain of the function $f(x) = \frac{x+1}{x+2}$.

(a) $\{x|x \neq -5\}$

(c) $\{x|x \neq -2\}$

(e) $\{x|x \neq 0\}$

(b) $\{x|x \neq -1\}$

(d) $\{x|x \neq -1, -2\}$

(f) All real numbers

20. Find the range of the function $f(x) = \frac{x+1}{x+2}$.

(a) $\{x|x \neq 1\}$

(c) $\{x|x \neq \frac{1}{2}\}$

(e) $\{x|x \neq 0\}$

(b) $\{x|x \neq -1\}$

(d) $\{x|x \neq 2\}$

(f) All real numbers

1. d
2. f
3. a
4. a
5. c
6. d
7. b
8. e
9. h
10. g
11. f
12. a
13. f
14. b
15. e
16. b
17. b
18. d
19. c
20. a