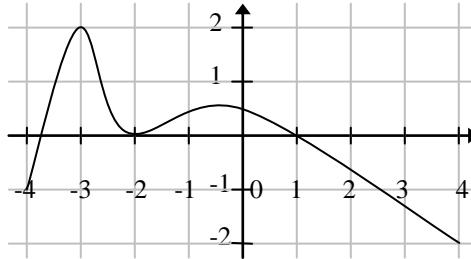


Math 111 – Exam 1 – Fall 2011

No books, notes, or calculators allowed.

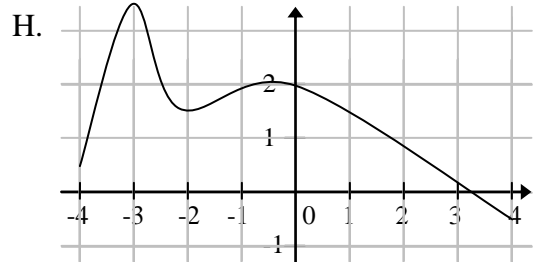
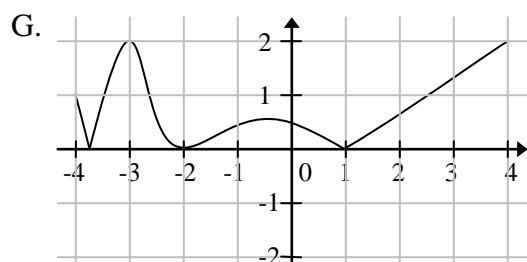
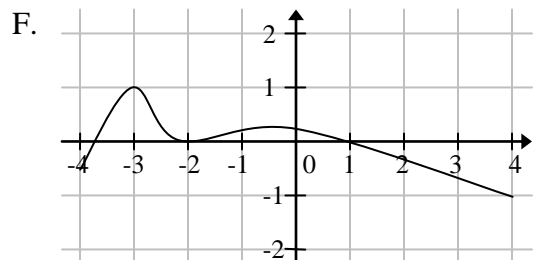
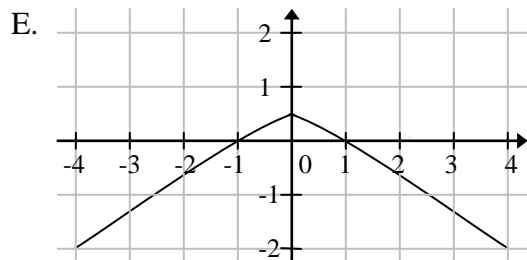
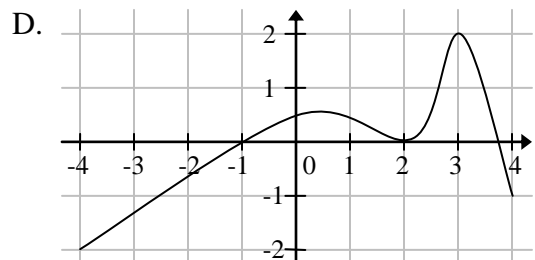
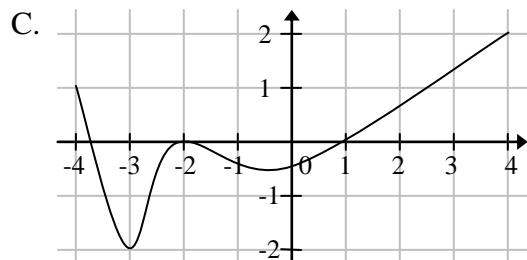
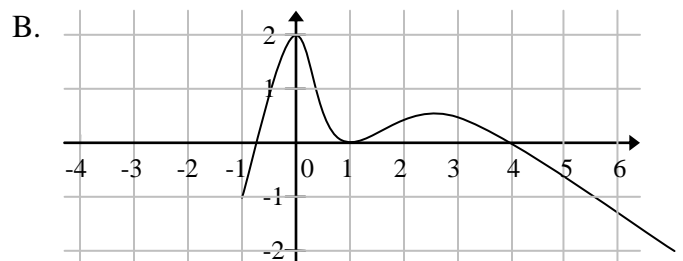
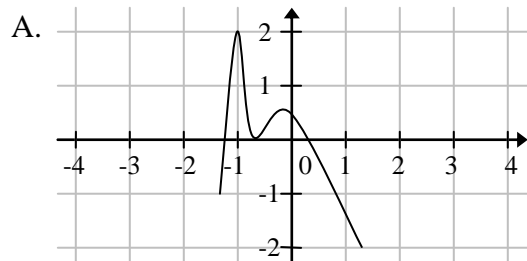
Do NOT write on this exam.

For problems 1-8, refer to the graph of $y = f(x)$ given to the right:

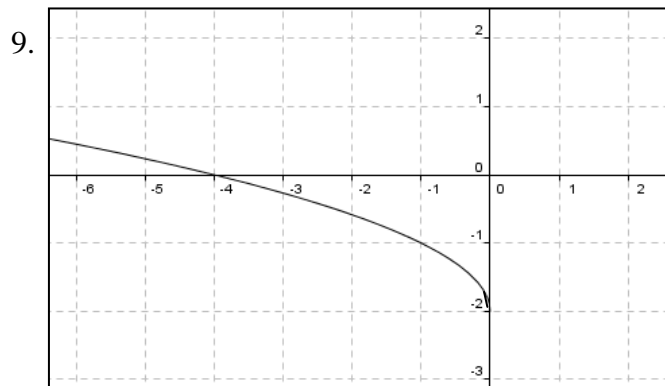


Choose the graph for each of the following functions. Answers may be used more than once.

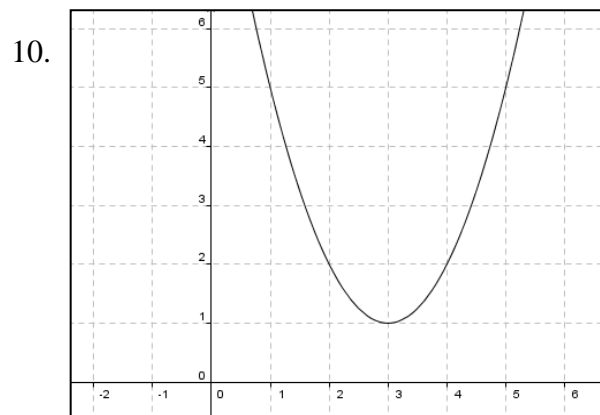
- | | | | |
|-----------------|--------------------------|-----------------------------|-------------------|
| 1. $y = f(x) $ | 2. $y = \frac{1}{2}f(x)$ | 3. $y = f(-x)$ | 4. $y = f(3x)$ |
| 5. $y = -f(x)$ | 6. $y = f(x)$ | 7. $y = f(x) + \frac{3}{2}$ | 8. $y = f(x - 3)$ |



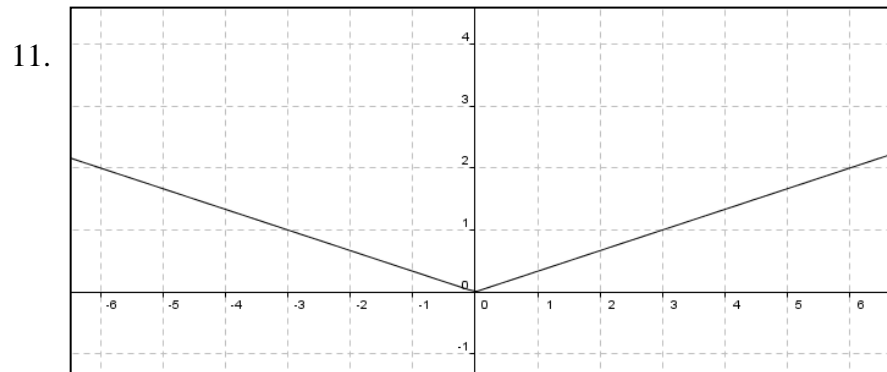
For problems 9-12, choose the equation that yields the given graph (each grid line is one unit).



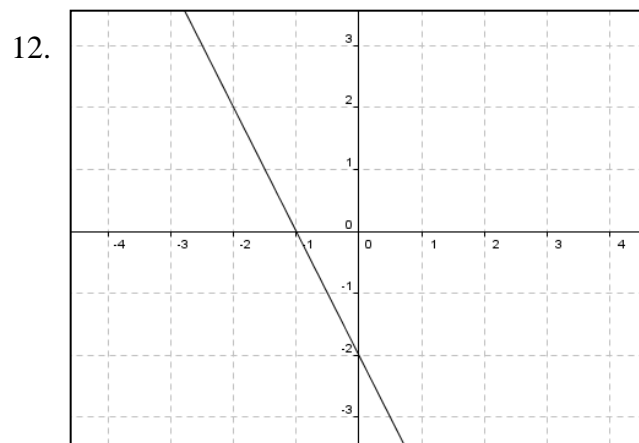
- A. $y = -\sqrt{x+2}$
- B. $y = \sqrt{-x} - 2$
- C. $y = -\sqrt{x} - 2$
- D. $y = \sqrt{-x} + 2$
- E. $y = -\sqrt{x} + 2$



- A. $y = (x - 1)^2 + 3$
- B. $y = 3x^2 + 1$
- C. $y = (x + 3)^2 + 1$
- D. $y = (x - 3)^2 + 1$
- E. $y = (x + 1)^2 - 3$



- A. $y = \frac{1}{3}|x|$
- B. $y = |3x|$
- C. $y = |x| + 3$
- D. $y = |x| - 3$
- E. $y = |x - 3|$



- A. $y = -\frac{1}{2}x - 2$
- B. $y = -2(x - 1)$
- C. $y = 2x - 2$
- D. $y = -2(x + 1)$
- E. $y = 2(x + 1)$

Problems 13 – 14 refer to the function f given by $\{(-7,2), (-1,-1), (0,5), (2,3), (4,-6)\}$.

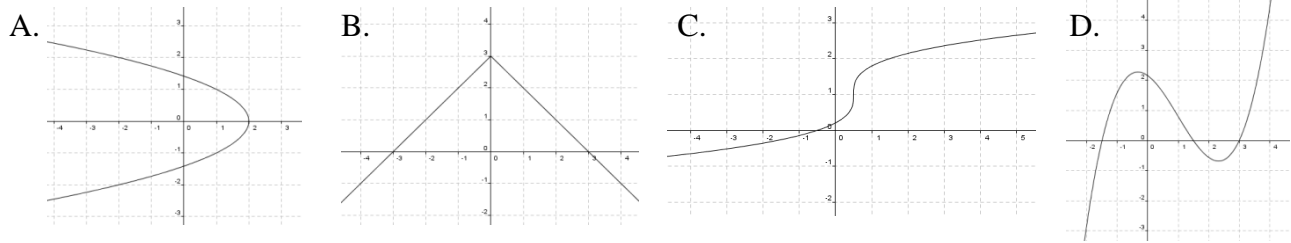
13. Find the inverse function of f . (Find f^{-1})

- A. $\{(7,-2), (1,1), (0,-5), (-2,-3), (-4,6)\}$
- B. $\{(2,-7), (-1,-1), (5,0), (3,2), (-6,4)\}$
- C. $\{(4,-6), (2,3), (0,5), (-1,-1), (-7,2)\}$
- D. $\{(-6,-7), (3,-1), (5,0), (-1,2), (2,4)\}$

14. What is the domain of the inverse function of f ? (Find the domain of f^{-1})

- A. $\{-4, -2, 0, 1, 7\}$
- B. $\{5\}$
- C. $\{-6, -1, 2, 3, 5\}$
- D. $\{-7, -1, 0, 2, 4\}$

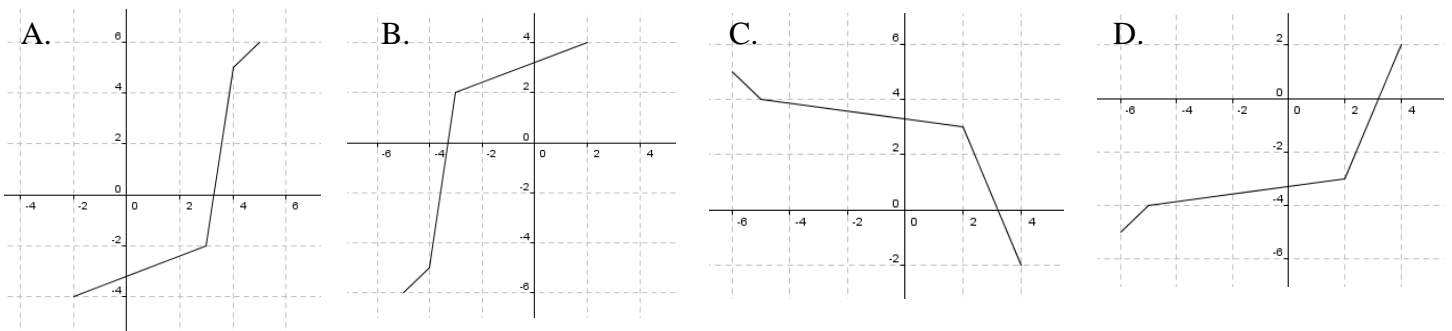
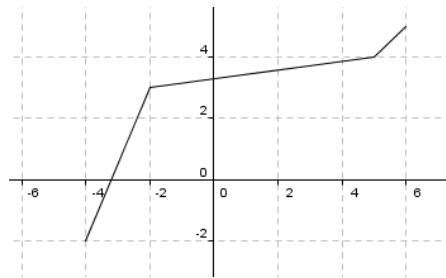
15. Which of the following is the graph of a one-to-one function?



16. The function $f(x) = 10 - 5x$ is one-to-one. Find the inverse of f .

- A. $f^{-1}(x) = \frac{x}{10} + \frac{1}{2}$
- B. $f^{-1}(x) = -\frac{1}{5}x + 2$
- C. $f^{-1}(x) = -\frac{1}{5}x + 10$
- D. $f^{-1}(x) = \frac{1}{5}x - 2$

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



Problems 18 – 20 refer to the one-to-one function f given by $f(x) = \frac{3x-4}{x+2}$.

18. Find the inverse of f .

A. $f^{-1}(x) = \frac{2x+4}{-x+3}$ B. $f^{-1}(x) = \frac{-6}{x-3}$ C. $f^{-1}(x) = \frac{-3x+4}{x+2}$ D. $f^{-1}(x) = \frac{2x-4}{x-3}$

19. What is the domain of the function f ?

A. $\{x|x \neq -3\}$ B. $\left\{x|x \neq \frac{4}{3}\right\}$ C. $\{x|x \neq 3\}$ D. $\{x|x \neq -2\}$ E. $\{x|x \neq 0\}$ F. All real numbers

20. What is the range of the function f ? Hint: Use f^{-1} .

A. $\{y|y \neq -2\}$ B. $\{y|y \neq 3\}$ C. $\left\{y|y \neq -\frac{4}{3}\right\}$ D. $\{y|y \neq -3\}$ E. $\{y|y \neq 0\}$ F. All real numbers

Answers:

1. G
2. F
3. D
4. A
5. C
6. E
7. H
8. B
9. B
10. D
11. A
12. D
13. B
14. C
15. C
16. B
17. A
18. A
19. D
20. B