

# Practice Exam for Exam 1, Math 1111, Spring 2007

Print Your Name:

- (1) No calculator with a CAS on it such as the TI-85 or TI-92.
- (2) In some problems you will need to circle more than one alternatives.
- (3) At this point I do not know how many problems I will put in the actual exam.

1. Find all factors of  $x^2 + 10x + 21$ .

- A)  $x + 3$  B)  $x - 3$  C)  $x + 7$  D)  $x - 7$  E)  $x + 1$

2. Find all factors of  $x^3 - x^2 - 2x + 2$ .

- A)  $x + 2$  B)  $x^2 + 2$  C)  $x^2 - 2$  D)  $x - 2$  E)  $x + 1$

3. Simplify  $\frac{\frac{1}{x} + \frac{1}{y}}{x + y}$

- A)  $\frac{1}{x}$  B)  $\frac{1}{y}$  C)  $\frac{1}{x+y}$  D)  $\frac{1}{xy}$  E) None of these.

4. Simplify  $\frac{x^2 - 4}{x^2 - 4x + 4} \cdot \frac{2x - 4}{x + 2}$

- A)  $\frac{2}{(x-2)^2}$  B)  $\frac{2(x-2)^2}{x+2}$  C) 2 D)  $\frac{1}{2}$  E) None of these.

5. Find all functions among the following relations.

- A)  $\{(1, 2), (2, 2)\}$  B)  $\{(1, 2)\}$  C)  $\{(1, 2), (1, 4)\}$  D)  $\{(1, 2), (3, 4)\}$  E)  $\{(2, 1), (2, 2)\}$

6. Let  $f(x) = x^2 - 10x - 1$ . Find  $f(1) - f(-1)$ .

- A) 20 B) -20 C) 10 D) -10 E) -1

7. Let  $f(x) = x^2 - 10x - 1$ . Find  $f(x + 1)$ .

- A)  $x^2 - 8x - 11$  B)  $x^2 - 8x - 10$  C)  $x^2 - 9x - 11$  D)  $x^2 - 9x - 10$  E) None of these.

8. Let  $f(x)$  be the function defined by the graph in Problem 85 on page 151. Find  $f(1) + 2f(3)$ .

- A) 5 B) 6 C) 7 D) 8 E) None of these.

9. Let  $f(x)$  be the function defined by the graph in Problem 62 on page 165. Find all relative maxima of the function  $f(x)$ .

- A) -2 B) 3 C) 4 D) 2 E) 1

10. Let  $f(x)$  be the function defined by the graph in Problem 62 on page 165. Find the range of the function  $f(x)$ .

11. Find the slope of the line that passes through the points  $(-3, -1)$  and  $(-2, 4)$ .

A) 5 B)  $-5$  C)  $-\frac{1}{5}$  D) 3 E) None of these.

12. Find an equation of the line passing through  $(2, -5)$  and with its slope 3.

A)  $y = 2x - 1$  B)  $y = 2x - 1$  C)  $y = 2x - 11$  D)  $y = 2x - 10$  E) None of these.

13. Find the slope of the line  $4x + 6y + 11 = 0$ .

A)  $\frac{2}{3}$  B)  $-\frac{2}{3}$  C)  $\frac{3}{2}$  D)  $-\frac{3}{2}$  E) None of these.

14. Choose two lines that are perpendicular to each other.

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

15. Choose two lines that are parallel to each other.

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

16. Find an equations of the line that is perpendicular to  $x + y = 1$  and passing through  $(1, 2)$ .

A)  $y = x + 1$  B)  $y = -x + 3$  C)  $y = x + 3$  D)  $y = -x + 3$  E) None of these.

17. Find the average rate of change of  $f(x) = x^2 + x$  from  $x = 1$  to  $x = 3$ .

A) 6 B) 8 C) 10 D) 12 E) None of these.

18. Let  $f(x) = \sqrt{x}$  and  $g(x) = f(x + 10)$ . Find  $g(6)$

A)  $\sqrt{6}$  B) 4 C)  $\sqrt{10}$  D) 2 E) None of these.

19. Find the function that is a vertical translation of  $y = f(x)$  by 1.

A)  $y = f(x + 1)$  B)  $y = f(x - 1)$  C)  $y = f(x) + 1$  D)  $y = f(x) - 1$  E) None of these.

20. Find the function that is a horizontal translation of  $y = f(x)$  by 1.

A)  $y = f(x + 1)$  B)  $y = f(x - 1)$  C)  $y = f(x) + 1$  D)  $y = f(x) - 1$  E) None of these.

21. Find all functions whose graph is symmetric about the  $y$ -axis.

A)  $y = x^2 - 1$  B)  $y = x - 1$  C)  $y = x^2 + 3x^4$  D)  $y = x^3 + x^2$  E) None of these.

22. Find all functions whose graph is symmetric about the origin.

A)  $y = x^2 - 1$  B)  $y = x - 1$  C)  $y = x^2 + 3x^4$  D)  $y = x^3 + x^2$  E) None of these.

23. Let  $f(x) = x^2 + 1$  and  $g(x) = \sqrt{x}$ . Find  $(f \circ g)(x)$

A)  $x + 1$  B)  $\sqrt{x^2 + 1}$  C)  $\sqrt{x}(x^2 + 1)$  D)  $x^2 + 1$  E) None of these.

**24.** Let  $f(x) = x^2 + 1$  and  $g(x) = \sqrt{x}$ . Find  $(f + g)(1)$ .

A) 1 B) 2 C) 3 D) 4 E) None of these.

**25.** Let  $f(x) = x^2 + 1$  and  $g(x) = \sqrt{x}$ . Find  $(f/g)(1)$ .

A) 1 B) 2 C) 3 D) 4 E) None of these.