MATH 75A

Test 1

September 26, 2005

Name:_____

- No books, notes, or calculators are allowed.
- Please show all your work for problems 7-12.

Multiple choice questions: circle the correct answer

1. The function $f(x) = 3x^2 + 5x^4$ is

   A. even **B.** odd **C.** both even and odd **D.** neither even nor odd

2. The domain of the function $f(x) = \dfrac{x+6}{x^2-2x}$ is

   A. $(0, \infty)$ **B.** $(-\infty, 0) \cup (0, \infty)$ **C.** $(0, 2)$ **D.** $(-\infty, 0) \cup (0, 2) \cup (2, \infty)$

   E. None of the above

3. Let $f(x) = \begin{cases} x^2 + 1 & \text{if } x \geq -2 \\ x - 3 & \text{if } -4 < x < -2 \\ x^2 - 4 & \text{if } x \leq -4 \end{cases}$. Find $f(-5)$.

   A. -29 **B.** -24 **C.** -8 **D.** 21 **E.** 26

4. If $f(x) = 1 + x$ and $g(x) = x^2 - 6$, find $(fg)(3)$.

   A. 0 **B.** 4 **C.** 7 **D.** 10 **E.** 12

5. Evaluate $\log_4 \left(\dfrac{4}{4^7}\right)$.

   A. -8 **B.** -6 **C.** $\dfrac{1}{7}$ **D.** $\dfrac{1}{6}$ **E.** 8

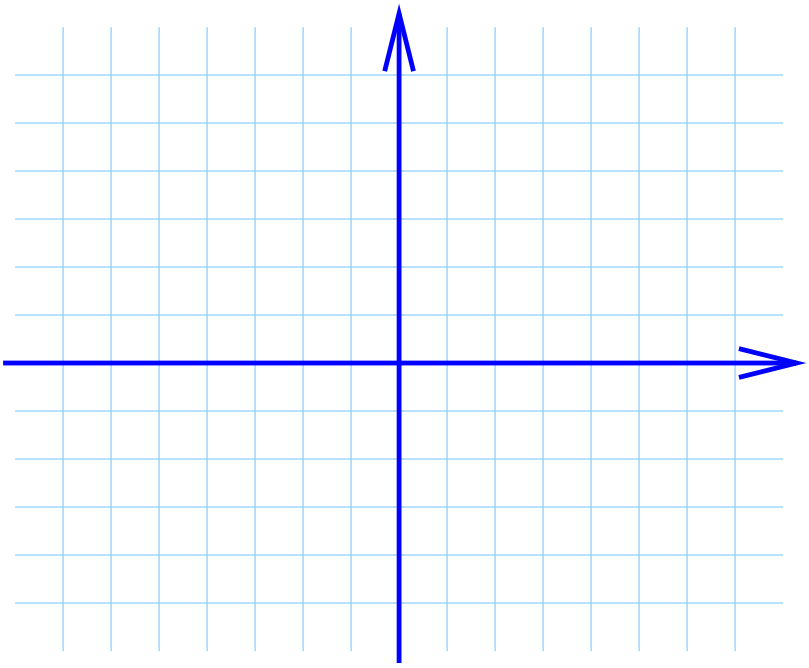
6. Evaluate $\arccos \left(\dfrac{1}{2}\right)$.

   A. 0 **B.** $\dfrac{\pi}{6}$ **C.** $\dfrac{\pi}{4}$ **D.** $\dfrac{\pi}{3}$ **E.** $\dfrac{\pi}{2}$

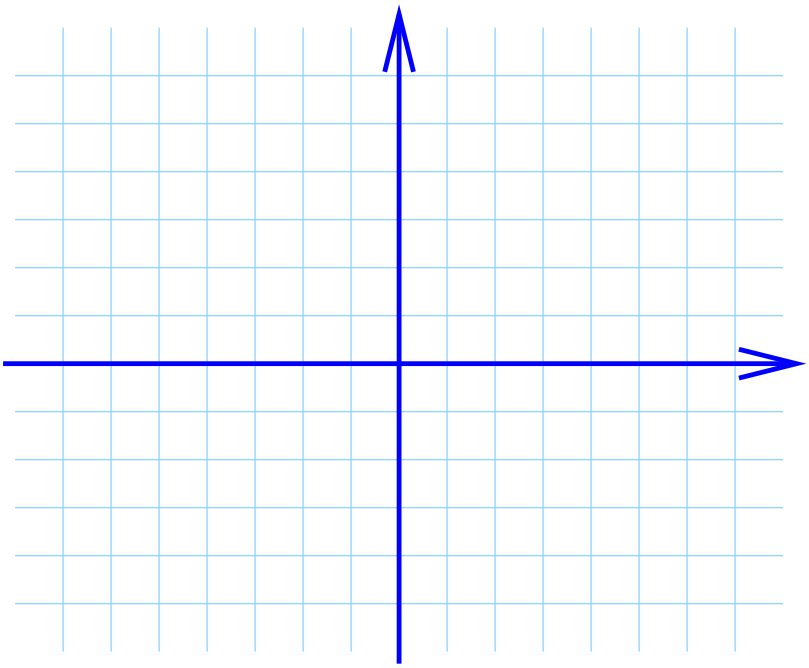
Regular problems: show all your work

7. Use appropriate transformations to sketch the graph of $f(x) = 4 - 2\sin(x)$.

Show your work here:



Final graph:



8. Let $f(x) = \dfrac{1}{x-1}$ and $g(x) = \sqrt{x}$. Find the function $f \circ g$.

9. Write an equation of the circle whose radius is 4 and center is at $(-2, 1)$.

10. Write an equation of the line that passes through the points $(2, 4)$ and $(-1, 7)$.

11. Let $f(x) = x^3 - 4$. Find $f^{-1}(x)$.

12. Simplify:

(a) $\dfrac{x^4 \cdot \sqrt[3]{x^6}}{x^{10}}$

(b) $\dfrac{x + \frac{2}{x}}{\frac{1}{x} + 1} - \dfrac{x^2}{x+1}$

Please do not write anything on this page

Problem	Value	Score
1	3	
2	3	
3	3	
4	3	
5	3	
6	3	
7	5	
8	5	
9	5	
10	6	
11	5	
12	6	
Total	50	

	Your scores (so far)	Out of	Grade
Homework		65	
Quizzes		20	
Test 1		50	