

MATH 75A

Test 1

March 2, 2009

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 $f(x) = 2x^3 + 4x$ is

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

2. The domain of the function $f(x) = \frac{x+6}{(x+1)(x-1)}$ is

- A. $[-6, \infty)$ B. $(-\infty, 0) \cup (0, \infty)$ C. $(-1, 1)$ D. $(-\infty, -1) \cup (-1, 1) \cup (1, \infty)$

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 $f(-1)$.

- A. -3 B. -2 C. 0 D. 2 E. 3

4. If $f(x) = \sin x$ and $g(x) = \sqrt{x-4}$, find $(fg)(4)$.

- A. 0 B. 1 C. -1 D. 0.5 E. -0.5

5. If we shift the graph of $y = \cos(x)$ 3 units to the right, then the equation of the new graph is

- A. $y = \cos(x) + 3$ B. $y = \cos(x) - 3$ C. $y = \cos(x + 3)$ D. $y = \cos(x - 3)$

E. $y = \cos(x/3)$

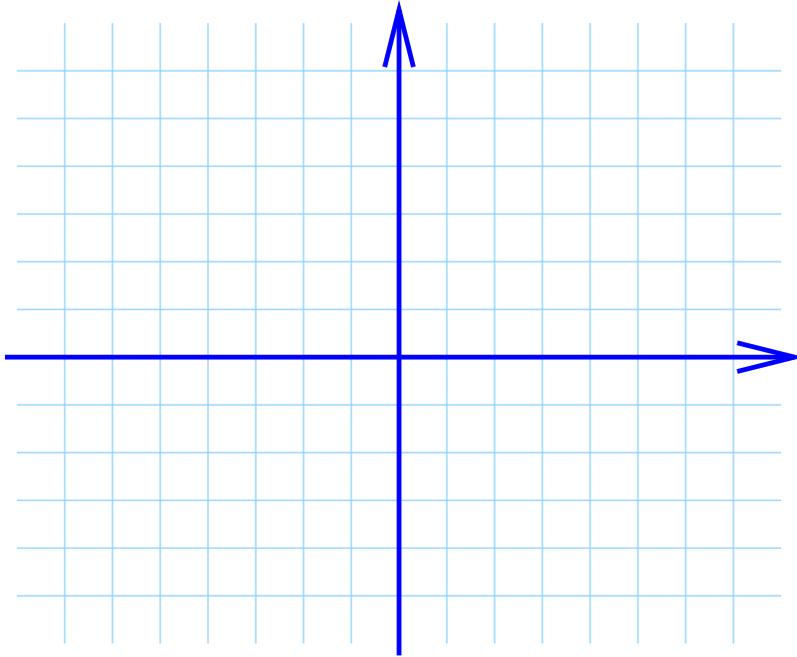
6. Simplify $\frac{x}{x-1} - \frac{\frac{1}{x-1} + 1}{x}$.

- A. 1 B. $x - 1$ C. x D. $\frac{1}{x-1}$ E. $\frac{x-2}{x}$

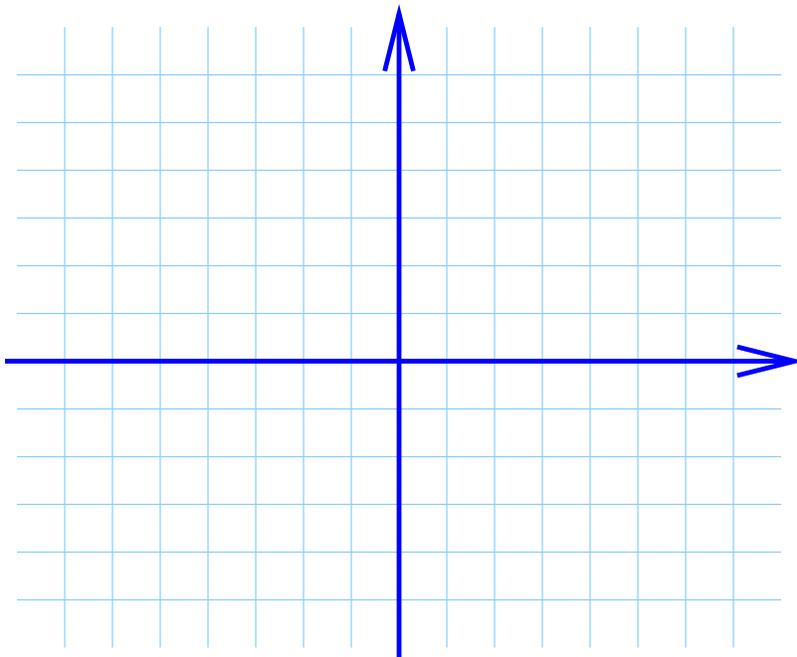
Regular problems: show all your work

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

Show your work here:



Final graph:



8. Let $f(x) = \frac{x-2}{x+1}$ and $g(x) = \sqrt{x}$. Find the function $f \circ g$.

9. Write an equation of the circle whose radius is 3 and center is at $(2, -5)$.

10. Write an equation of the line that passes through the point $(-1, 3)$ and has slope -2 .

11. Evaluate the following expressions:

(a) $\sin\left(\frac{7\pi}{6}\right)$

(b) $\cos\left(-\frac{3\pi}{4}\right)$

12. Evaluate the limits:

(a) $\lim_{x \rightarrow -1} (20 - 5x)$

(b) $\lim_{x \rightarrow 2} \frac{x^2 - 2x}{x^2 - 4}$

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	5	
11	6	
12	6	
Total	50	