

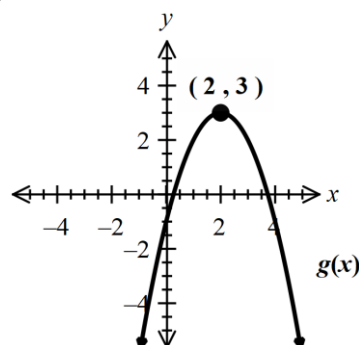
الاسم : الرقم : الشعبة : المدرّس :

Part One: (2.0 points each). Write the correct answer for each of the following in the table provided. Only the answers in the table will be graded.

1	2	3	4	5

1. The figure below shows the graph of $g(x)$ which is obtained by **translating and/or reflecting** the graph of $f(x) = x^2$. The **equation** of $g(x)$ is

- a. $g(x) = 3 - (x - 2)^2$
b. $g(x) = 3 - (x + 2)^2$
c. $g(x) = 2 - (x - 3)^2$
d. $g(x) = 2 - (x + 3)^2$



2. If the domain of an **even** function $f(x)$ is $\mathbb{R}$ and $f(2) = -3$, then $f(-2)$ equals
- a. -2 b. 3 c. -3 d. 2

3. The **exact value** of the expression $\cos^{-1}\left(\cos \frac{4\pi}{3}\right)$ is

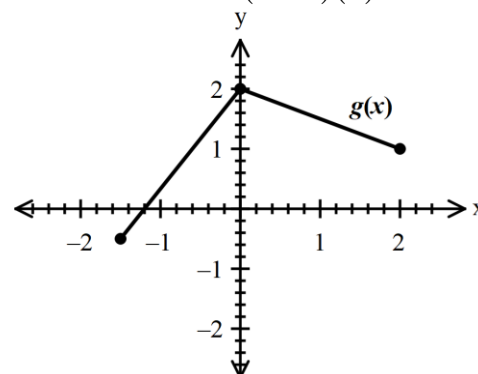
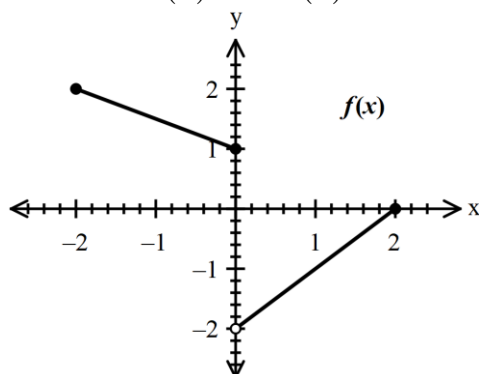
- a. $\frac{5\pi}{6}$ b. $\frac{2\pi}{3}$ c. $\frac{\pi}{3}$ d. $\frac{\pi}{6}$

4. Which of the following statements is **true**?

- a. $e^x \neq 0$ for all real numbers x . b. $g \circ f = f \circ g$ in general.
c. $\tan^{-1} x = \frac{\sin^{-1} x}{\cos^{-1} x}$ d. $\ln(0) = 1$

5. The graphs of the functions $f(x)$ and $g(x)$ are given below. The **value of** $(f \circ g)(0)$ equals

- a. 2
b. -1
c. 1
d. 0



Part Two: (3 points each). Fully answer each of the following questions.

1. Find the **domain** of the function $f(x) = \ln(3-x) + \sqrt{16-x^2}$.

2. Find the **exact value** of $\sin\left(2 \tan^{-1}\left(\frac{12}{5}\right)\right)$.

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

4. **Solve** the logarithmic equation $\log_2(x-1) + \log_2(x+2) = 2$.