Instructors: **1.** Dr. Hani Quareeq **2.** Dr. Rola Alseidi **3.** Mrs. Amani Shemat **4.** Mrs. Aminah Taani **5.** Mr. Feras Awd **6.** Mr. Ahmad Hamdan	**Philadelphia University** **Faculty of Science** **Department of Mathematics and Basic Science** **Midterm Exam**	**Academic Year:** 2022-2023 **Semester:** Fall **Date:** 4/12/2022 **Course:** Calculus 1 **Duration:** 75 Min

Name: **I.D. Number:**

Question One: [20 points] **Choose the correct answer and fill your answers in the table provided.**

Question	01	02	03	04	05	06	07	08	09	10
Answer										

1. The **domain** of the function $f(x) = \dfrac{\sin^{-1}(x)}{\ln x}$ **is:**

   (A) $(0, \infty)$ **(B)** $[0, \infty)$ **(C)** $(0, 1)$ **(D)** $(0, 1]$ **(E)** $[-1, 1]$

2. The **solution set** for the equation is $\dfrac{1}{3^x} = (27)^{2x-7}$ **is:**

   (A) -1 **(B)** 1 **(C)** -3 **(D)** 3 **(E)** None

3. The **value** of the $\lim\limits_{x \to 1^-} \dfrac{1-x}{x^2-1}$ **is:**

   (A) $\dfrac{1}{2}$ **(B)** $\dfrac{-1}{2}$ **(C)** $\dfrac{1}{4}$ **(D)** $\dfrac{-1}{4}$ **(E)** **(A)** $\dfrac{1}{8}$

4. The function $f(x) = \dfrac{\sec(x)+1}{|x|-x^2}$ **is:**

   (A) Even **(B)** odd **(C)** Neither even or odd **(D)** both even and odd

5. If $f(x) = 3x - 5$ and $(f \circ g)(x) = 12x^2 - 6x + 13$. Then $g(0) =$**:**

   (A) 6 **(B)** -6 **(C)** 5 **(D)** -5 **(E)** None

6. The value of $\tan^{-1}\left(\tan\left(\frac{5\pi}{6}\right)\right)$ **is:**

(A) $\frac{\pi}{5}$ **(B)** $\frac{-\pi}{6}$ **(C)** $\frac{5\pi}{6}$ **(D)** $\frac{\pi}{6}$ **(E)** None

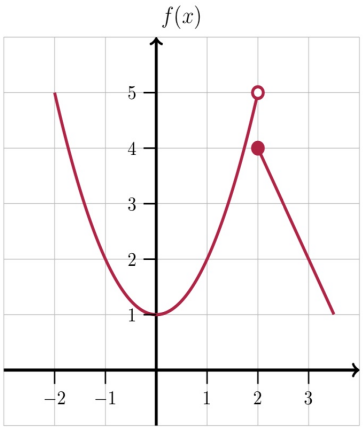
7. If $f(x) = \log_3 x + \sin^{-1}\left(\frac{-x}{27}\right)$, then $f(27) =$ **:**

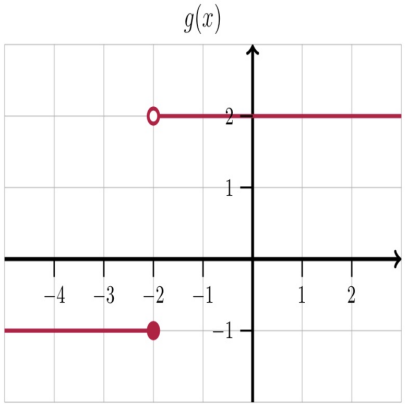
(A) $\frac{3+\pi}{2}$ **(B)** $\frac{3-\pi}{2}$ **(C)** $3-\frac{\pi}{2}$ **(D)** $3+\frac{\pi}{2}$ **(E)** 0

8. The **value of** of $\sin\left(\cos^1\left(\frac{3}{7}\right)\right)$ **=:**

(A) $\frac{\sqrt{40}}{7}$ **(B)** $\frac{-3}{7}$ **(C)** $\frac{3}{7}$ **(D)** $\frac{-\sqrt{40}}{7}$ **(E)** None

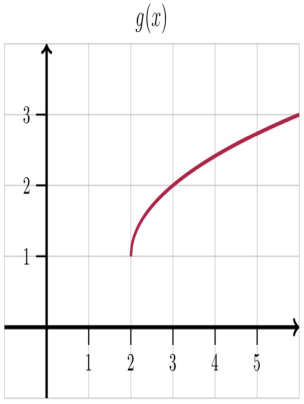
9. Given the graph below for $f(x)$, $g(x)$. Find $\lim_{x\to 2^-}\left(\frac{2g(x)+3x}{f(x)}\right)$ **:**





(A) -1 **(B)** $\frac{2}{5}$ **(C)** 2 **(D)** $\frac{-2}{5}$ **(E)** None

10. the graph below shows the graph of $g(x)$ which is obtained by **translating and or reflecting** the graph of $f(x) = \sqrt{x}$. The equation of $g(x)$**:**



(A) $g(x) = \sqrt{x-2}+1$ **(B)** $g(x) = \sqrt{x+2}+1$ **(C)** $g(x) = \sqrt{x-1}+2$ **(D)** $g(x) = \sqrt{x+1}+2$
(E) None

Question Two: [10 points (3+3+4)]

1. Solve the following equation

$$\ln(x+4) - 2\ln 2 = 1$$

2. Evaluate the following limit

$$\lim_{x\to 1} \frac{\sqrt{x+3}-2}{x^2-1}$$

3. Let $f(x) = \dfrac{2x-1}{3+x}$, $x \neq -3$, find $f^{-1}(x)$

Good Luck