Stanford International School
Academic year 2024-2025

Math Department
Advanced Math 1

Quarter 1 Exam

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1. State the domain of $f(x) = \frac{-7}{x^2 - x - 12}$.

A $\{x | x \neq -4, 3, x \in \mathbb{R}\}$
B $\{x | x \neq -4, -3, x \in \mathbb{R}\}$
C $\{x | x \neq -3, 4, x \in \mathbb{R}\}$
D $\{x | x \neq 3, 4, x \in \mathbb{R}\}$

1. Ⓐ Ⓑ Ⓒ Ⓓ

2. Evaluate $\frac{1}{3}\log_{64} x$.

F 262,144 **G** 256 **H** $\frac{64}{3}$ **J** 4

2. Ⓐ Ⓑ Ⓒ Ⓓ

3. Find the exact value of $\sin^{-1}\frac{\sqrt{2}}{2}$.

A $\frac{\pi}{6}$ **B** $\frac{\pi}{4}$ **C** $\frac{\pi}{3}$ **D** π

3. Ⓐ Ⓑ Ⓒ Ⓓ

4. Simplify $\sin x \tan x + \cos x$.

F $\csc x$ **G** $\cot x$ **H** $\sec x$ **J** $\tan x$

4. Ⓐ Ⓑ Ⓒ Ⓓ

5. What is the solution of the system of equations shown?

$-x + 3y + 2z = 9$

$-4y + z = -7$

$2x - 3y + z = -7$

A (–1, 2, 1) **B** (1, –2, –1) **C** (–1, 2, –1) **D** (1, –2, 1)

5. Ⓐ Ⓑ Ⓒ Ⓓ

6. What is $[g \circ f](x)$ if $f(x) = 3x^2 - 1$ and $g(x) = x - 4$?

F $[g \circ f](x) = 3x^2 - 5$
G $[g \circ f](x) = x^2 - 8x + 16$
H $[g \circ f](x) = 3x^2 - 24x + 48$
J $[g \circ f](x) = 3x^2 - 24x + 47$

6. Ⓐ Ⓑ Ⓒ Ⓓ

7. Solve $5^{x+2} = 25^{x-4}$.

A 5 **B** 6 **C** 8 **D** 10

7. Ⓐ Ⓑ Ⓒ Ⓓ

8. What is the determinant of $\begin{bmatrix} 3 & -5 \\ 1 & 3 \end{bmatrix}$?

F –14 **G** –4 **H** 4 **J** 14

8. Ⓐ Ⓑ Ⓒ Ⓓ

9. Which of the following is the inverse of $f(x) = 2x + 3$?

A $f^{-1}(x) = -2x - 3$
B $f^{-1}(x) = \frac{1}{2}x - 3$
C $f^{-1}(x) = \frac{x - 3}{2}$
D $f^{-1}(x) = \frac{x + 3}{2}$

9. Ⓐ Ⓑ Ⓒ Ⓓ

10. Choose the radian measure that is equal to 405°.

F $\frac{11\pi}{4}$ **G** $\frac{9\pi}{4}$ **H** $\frac{7\pi}{4}$ **J** $\frac{5\pi}{4}$

10. Ⓐ Ⓑ Ⓒ Ⓓ

11. Find *AB*, if possible.

$A = \begin{bmatrix} -1 & 4 & 3 \\ 2 & 0 & -5 \end{bmatrix}$, $B = \begin{bmatrix} -1 & 0 \\ 4 & 7 \end{bmatrix}$

A not possible **B** $\begin{bmatrix} 7 & -4 \\ 0 & -1 \end{bmatrix}$ **C** $\begin{bmatrix} 1 & -4 & -3 \\ -2 & 0 & 5 \end{bmatrix}$ **D** $\begin{bmatrix} 18 & 26 \\ 2 & 0 \end{bmatrix}$

11. Ⓐ Ⓑ Ⓒ Ⓓ

12. What is the effect on the graph of $f(x) = \log x$ when the equation is changed to $g(x) = \log (x + 4)$?

F The graph is translated 4 units up.
G The graph is translated 4 units to the left.
H The graph is translated 4 units to the right.
J The graph is translated 4 units down.

12. Ⓐ Ⓑ Ⓒ Ⓓ

13. Find the value of $\sin 2\theta$ in the interval (0, 90°) given that $\cos \theta = \frac{1}{4}$.

A $\frac{15}{64}$ **B** $\frac{15}{32}$ **C** $\frac{\sqrt{15}}{8}$ **D** $\frac{\sqrt{15}}{4}$

13. Ⓐ Ⓑ Ⓒ Ⓓ

14. What is the solution of $\frac{5}{x} + x - 4 = \frac{1}{x}$?

F 2 **G** 3 **H** 5 **J** 6

14. Ⓐ Ⓑ Ⓒ Ⓓ

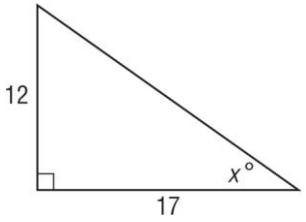
15. Find the exact value of $\tan \frac{5\pi}{4}$.

A $\frac{1}{2}$ **B** $\frac{4}{5}$ **C** 1 **D** $\frac{3}{2}$

15. Ⓐ Ⓑ Ⓒ Ⓓ

16. Which is closest to the value of *x*?

F 35.2 **H** 45.2
G 44.8 **J** 54.8



16. Ⓐ Ⓑ Ⓒ Ⓓ

17. The graph of an odd function is symmetric with respect to which of the following?

A the *x*-axis **C** the origin
B the *y*-axis **D** none of these

17. Ⓐ Ⓑ Ⓒ Ⓓ

18. Find the vertical asymptotes in the interval $[-2\pi, 2\pi]$ for the graph of $y = 3 \tan \frac{x}{3}$.

18. Ⓐ Ⓑ Ⓒ Ⓓ

A. π B. $-\pi$ C. π^2 D. $\pm \pi$

19. Find the partial fraction decomposition of $\frac{2x-4}{3x^2-2x}$.

19 Ⓐ Ⓑ Ⓒ Ⓓ

A. $\frac{2}{3X} - \frac{2}{X-1}$ B. $\frac{2}{X} - \frac{2}{1-X}$ C. $\frac{2}{3X} - \frac{2}{X+1}$ D. $\frac{2}{3X-1} - \frac{2}{2X}$

20. List all of the possible rational zeros of $f(x) = 2x^4 - 3x^2 + 5x - 3$.

20. Ⓐ Ⓑ Ⓒ Ⓓ

A. $\pm 2, \pm 1, \pm \frac{1}{2}, \pm \frac{3}{2}$ B. $\pm 3, \pm 2, \pm \frac{1}{2}, \pm \frac{3}{2}$ C. $\pm 1, \pm 3, \pm \frac{1}{2}, \pm \frac{3}{2}$ D. $\pm 4, \pm 1, \pm \frac{1}{2}, \pm \frac{3}{2}$

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Advanced Math. Answer Sheet

Quarter 1 Exam

	A	B	C	D
Q1	◯	◯	◯	◯
Q2	◯	◯	◯	◯
Q3	◯	◯	◯	◯
Q4	◯	◯	◯	◯
Q5	◯	◯	◯	◯
Q6	◯	◯	◯	◯
Q7	◯	◯	◯	◯
Q8	◯	◯	◯	◯
Q9	◯	◯	◯	◯
Q10	◯	◯	◯	◯
Q11	◯	◯	◯	◯
Q12	◯	◯	◯	◯
Q13	◯	◯	◯	◯
Q14	◯	◯	◯	◯
Q15	◯	◯	◯	◯
Q16	◯	◯	◯	◯
Q17	◯	◯	◯	◯
Q18	◯	◯	◯	◯
Q19	◯	◯	◯	◯
Q20	◯	◯	◯	◯

Student Name: ----------

Student Class: ----------