Stanford International School
Academic year 2024-2025

Math Department
Advanced Math 1

Quarter 2 Exam

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1. Find the remainder when $5x^3 + 8x - 2$ is divided by $x - 3$.

A –161 **B** 19 **C** 67 **D** 157

1. Ⓐ Ⓑ Ⓒ Ⓓ

2. Find the period and phase shift of the graph of $f(x) = -4\cos 2(x + \pi)$.

F 2, 4 right **G** π, 2π left **H** π, π left **J** 2π, π right

2. Ⓐ Ⓑ Ⓒ Ⓓ

3. Solve $2\cos^2 x + 5\cos x - 3 = 0$ where $0 \le x < 2\pi$.

A $\frac{\pi}{3}, \frac{5\pi}{3}$ **B** $\frac{\pi}{3}, \frac{2\pi}{3}$ **C** $\frac{\pi}{6}, \frac{5\pi}{6}$ **D** $\frac{\pi}{6}, \frac{11\pi}{6}$

3. Ⓐ Ⓑ Ⓒ Ⓓ

4. Find $\cos\frac{7\pi}{12}$.

F $\frac{1+\sqrt{2}}{2}$ **G** $\frac{1}{4}$ **H** $\frac{\sqrt{2}-\sqrt{6}}{4}$ **J** $\frac{\sqrt{2}+\sqrt{6}}{4}$

4. Ⓐ Ⓑ Ⓒ Ⓓ

5. Write the expression for the numerator of x for this system of equations using Cramer's Rule.

$2x - 5y + z = 6$
$-3x + 4y - 2z = -9$
$x + 2y + 4z = 5$

A $\begin{vmatrix} 2 & 5 & 6 \\ -3 & 4 & -9 \\ 1 & 2 & 5 \end{vmatrix}$ **B** $\begin{vmatrix} 2 & -5 & 1 \\ -3 & 4 & -2 \\ 1 & 2 & 4 \end{vmatrix}$ **C** $\begin{vmatrix} 6 & -5 & 1 \\ -9 & 4 & -2 \\ 5 & 2 & 4 \end{vmatrix}$ **D** $\begin{vmatrix} 2 & 6 & 1 \\ -3 & -9 & -2 \\ 1 & 5 & 4 \end{vmatrix}$

5. Ⓐ Ⓑ Ⓒ Ⓓ

6. Find $\sin\frac{7\pi}{6}$.

F $-\frac{\sqrt{3}}{2}$ **G** $-\frac{1}{2}$ **H** $\frac{1}{2}$ **J** $\frac{\sqrt{3}}{2}$

6. Ⓐ Ⓑ Ⓒ Ⓓ

7. Find $\sin\left(\arccos -\frac{5}{7}\right)$.

A $-\frac{2}{7}$ **B** $\frac{25}{49}$ **C** $-\frac{\sqrt{24}}{7}$ **D** $\frac{2\sqrt{6}}{7}$

7. Ⓐ Ⓑ Ⓒ Ⓓ

8. Find $f^{-1}(x)$ if $f(x) = 2x - 6$.

F $f^{-1}(x) = \frac{x+6}{2}$ **H** $f^{-1}(x) = \frac{1}{2x-6}$

G $f^{-1}(x) = -2x + 6$ **J** $f^{-1}(x) = \frac{1}{2}x + 6$

8. Ⓐ Ⓑ Ⓒ Ⓓ

9. Find the equation of the horizontal asymptote of $g(x) = \frac{2x - 10}{x + 3}$.

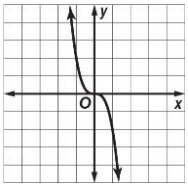
A $y = 5$ **B** $y = -3$ **C** $y = 2$ **D** $y = -\frac{10}{3}$ **9.** Ⓐ Ⓑ Ⓒ Ⓓ

10. The graph of $g(x) = (x - 2)^3 + 3$ can be obtained from the graph of $f(x) = x^3$ by doing which transformation?

F move right 2 and up 3 **H** move left 2 and up 3
G move right 2 and down 3 **J** move left 2 and down 3 **10.** Ⓐ Ⓑ Ⓒ Ⓓ

11. If $f(x) = -2x^3$, where is $f(x)$ decreasing?

A $(-\infty, \infty)$ **C** $(0, \infty)$
B $(-\infty, 0)$ **D** $(-10, 10)$



11. Ⓐ Ⓑ Ⓒ Ⓓ

12. Find the eccentricity of the conic represented by $\frac{(x - 6)^2}{100} + \frac{(y - 4)^2}{144} = 1$.

F $\frac{5}{6}$ **G** $\frac{6}{5}$ **H** $\frac{\sqrt{11}}{6}$ **J** $\frac{\sqrt{11}}{5}$ **12.** Ⓐ Ⓑ Ⓒ Ⓓ

13. Find the value of $\begin{vmatrix} 2 & 3 & 0 \\ -1 & 4 & -2 \\ 5 & 0 & -3 \end{vmatrix}$

A –49 **B** –63 **C** –67 **D** –79 **13.** Ⓐ Ⓑ Ⓒ Ⓓ

14. Change 105˚ to radians.

F $\frac{5\pi}{12}$ **G** $\frac{7\pi}{12}$ **H** $\frac{3\pi}{4}$ **J** $\frac{5\pi}{6}$ **14.** Ⓐ Ⓑ Ⓒ Ⓓ

15. If $\cos x = -\frac{7}{25}$ and $\pi < x < \frac{3\pi}{2}$, find $\sin 2x$.

A $\frac{336}{625}$ **B** $-\frac{336}{625}$ **C** $-\frac{48}{25}$ **D** $-\frac{527}{625}$ **15.** Ⓐ Ⓑ Ⓒ Ⓓ

16. Find the domain of $f(x) = \frac{x + 2}{3x - 1}$.

F $\{x \mid x \in \mathbb{R}\}$ **H** $\{x \mid x \neq -2, x \in \mathbb{R}\}$
G $\{x \mid x \neq \frac{1}{3}, x \in \mathbb{R}\}$ **J** $\{x \mid x \neq -2, \frac{1}{3}, x \in \mathbb{R}\}$ **16.** Ⓐ Ⓑ Ⓒ Ⓓ

17. If $f(x) = 2x + 7$ and $g(x) = x^2 - 3$, find $f(g(x))$.

A $2x^3 + 7x^2 - 6x - 21$ **C** $4x^2 + 28x + 46$
B $x^2 + 2x + 4$ **D** $2x^2 + 1$ **17.** Ⓐ Ⓑ Ⓒ Ⓓ

18. Find the element in row 2, column 1 of the product $\begin{bmatrix} 2 & -6 \\ 5 & 9 \end{bmatrix} \cdot \begin{bmatrix} 1 & -1 \\ 4 & -2 \end{bmatrix}$

F –24 **G** 19 **H** 36 **J** 41 **18.** Ⓐ Ⓑ Ⓒ Ⓓ

19. Find $\log_2 32$.

A 2 **B** 5 **C** 16 **D** 64 **19** Ⓐ Ⓑ Ⓒ Ⓓ

20. Find a rectangular form of an equation given by $x = 10 \cos \theta$ and $y = 4 \sin \theta$. **20** Ⓐ Ⓑ Ⓒ Ⓓ

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A. x2/10  + y2/16 = 1
B. y2/100 + x2/16 = 1
C. y2/16 + x2/100 = 1
D. x2/100 + y2/16 = 1
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Advanced Math. Answer Sheet

Quarter 2 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: ----------