ARE YOU READY 4 CALCULUS

TEACHER NAME: _____
STUDENT NAME: _____
PERIOD: _____

25 Problems | 40 Minutes | No Calculator

SCORE SHEET

STUDENT NAME: _____

Problem	Answer	Problem	Answer
1		21	
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Problem: 1

Determine the solution of the system of equations $2x - y = 4$ and $x + 2y = 2$.

- ☐ $(0, 2)$
- ☐ $(2, 0)$
- ☐ $(2, -1)$
- ☐ $(1, 2)$

Problem: 2

The population of a certain country is declining at such a rate that the population size is reduced in half every 6 years. If the population is $20,000$ people today, determine the population 24 years from now.

- ☐ $10,000$
- ☐ $2,500$
- ☐ $1,250$
- ☐ 625

Problem: 3

A rectangular box of length l, width w, and height h has no top. State the outside surface area of this box.

- ☐ lwh
- ☐ $lw + 2lh + 2wh$
- ☐ $4lh + 4wh$
- ☐ $2(l + w + h)$

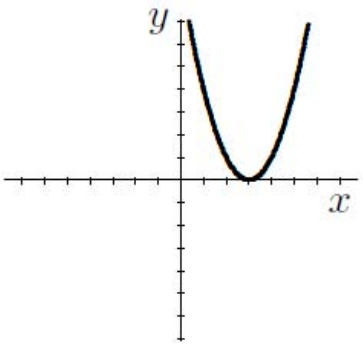
Problem: 4

Let $f(x) = x^2 - 4x + 3$. The values of x for which $f(x) \leq 0$ are

- ☐ $1 \leq x \leq 3$
- ☐ $-3 \leq x \leq -1$
- ☐ $0 \leq x \leq 1$
- ☐ $3 \leq x \leq 5$

Problem: 5

Which of the following functions is represented by the following graph?



- ☐ $y = (x+3)^2$
- ☐ $y = 3x$
- ☐ $y = (x-3)^2$
- ☐ $y = x^2 - 3$

Problem: 6

Given that $\log_4(x-1) = 3$, then $x =$

- ☐ 43
- ☐ 63
- ☐ 65
- ☐ 82

Problem: 7

Simplify $(81)^{1/4}(64)^{-1/6}$.

- ☐ -6
- ☐ $(5184)^{1/12}$
- ☐ 6
- ☐ $\frac{3}{2}$

Problem: 8

Assuming 2^{10} is approximately 1000, which of the following best approximates 2^{40}?

- ☐ 4000
- ☐ $10,000,000$
- ☐ 10^{12}
- ☐ 1000^{30}

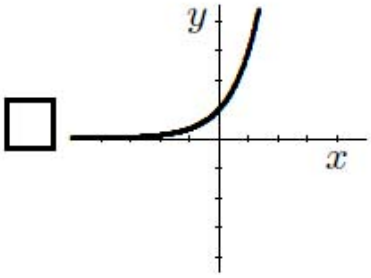
Problem: 9

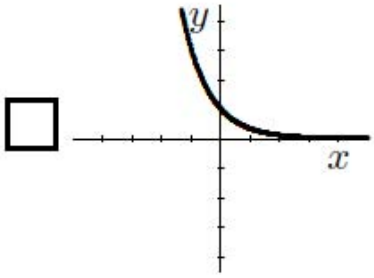
Definition: An **even function** is a function for which $h(-x) = h(x)$ for all x in the domain of h. Which of the following is an even function?

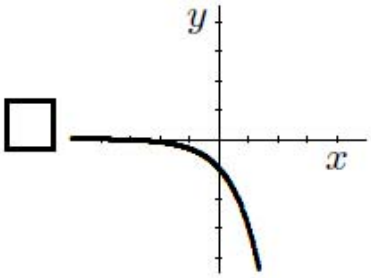
- ☐ $x^4 + x^2$
- ☐ $(x+2)^6$
- ☐ x^3
- ☐ $x^5 + 2$

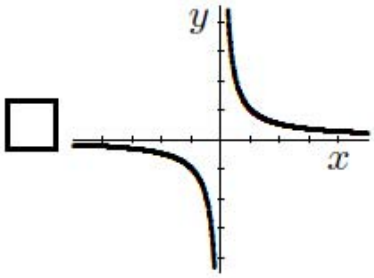
Problem: 10

Which of the following best represents the graph of $y = 3^{-x}$?

☐ 

☐ 

☐ 

☐ 

Problem: 11

Determine the slope of the line that passes through the points $(1, 3)$ and $(-5, -9)$.

- ☐ -1
- ☐ $\frac{2}{3}$
- ☐ $\frac{3}{2}$
- ☐ 2

Problem: 12

Let $f(x) = -\frac{3}{2}x + 9$. The graph of this function in a standard coordinate system is

- ☐ a horizontal line
- ☐ a vertical line
- ☐ a parabola
- ☐ none of the above

Problem: 13

Let $f(x) = x^2 - 25$ and $g(x) = x^2 - 4x - 5$. For what value(s) of x is $\frac{f(x)}{g(x)}$ undefined?

- ☐ none
- ☐ 5 and -1
- ☐ 1
- ☐ 5 and -5

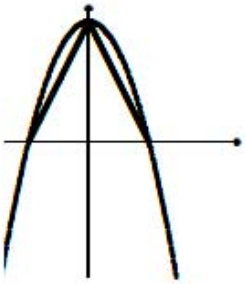
Problem: 14

In **fully factored** form, $x^3 + 3x^2 - x - 3 =$

- ☐ $(x-1)(x+1)(x+3)$
- ☐ $x^3 + 3x^2 - x - 3$
- ☐ $(x^2-1)(x+3)$
- ☐ none of the above

Problem: 15

Determine the area of the triangle in the following diagram:



Note that the equation of the parabola is $y = -x^2 + 4$. Note also that the base of the triangle lies on the x–axis.

- ☐ 4
- ☐ 8
- ☐ 18
- ☐ 36

Problem: 16

The perimeter of a square is $\frac{1}{10}$ the magnitude of its area. Find the length of the side of the square.

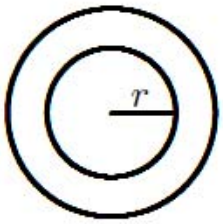
- [ ] 4
- [ ] 10
- [ ] 40
- [ ] 100

Problem: 17

Let $g(x) = \frac{2x+1}{x+3}$. Determine $g(x+4)$.

- [ ] x
- [ ] $\frac{11}{7}$
- [ ] $\frac{2x+5}{x+7}$
- [ ] $\frac{2x+9}{x+7}$

Problem: 18



The radius of the outer circle is exactly 5 times as long as the radius of the inner circle. Determine the area of the region outside the inner circle and inside the outer circle.

- ☐ πr^2
- ☐ $4\pi r^2$
- ☐ $16\pi r^2$
- ☐ $24\pi r^2$

Problem: 19

For which of the following values of x is the function $y = \frac{x+9}{\sqrt{x^2-4}}$ undefined?

- [ ] 1
- [ ] 5
- [ ] 9
- [ ] -9

Problem: 20

Determine the solution set for the inequality $| x + 5 | \leq 4$.

- [ ] $1 \leq x \leq 9$
- [ ] $x \leq 9$
- [ ] $-9 \leq x \leq -1$
- [ ] $-9 \leq x$

Problem: 21

Which of the following trigonometric functions is **not** defined at $x = \frac{3\pi}{2}$?

- ☐ $\sin x$
- ☐ $\cos x$
- ☐ $\csc x$
- ☐ $\tan x$

Problem: 22

Which of the following equals $\frac{\sin\theta \tan\theta \csc^3\theta}{\sec\theta}$?

- ☐ $\cos\theta$
- ☐ $\csc\theta$
- ☐ $\sin\theta$
- ☐ None of the above

Problem: 23

Determine $g\left(\frac{5\pi}{16}\right)$ given that $g(x) = \sin(4x)$.

- ☐ $\frac{1}{\sqrt{2}}$
- ☐ $-\frac{1}{\sqrt{2}}$
- ☐ $\frac{1}{2}$
- ☐ $\frac{\sqrt{3}}{2}$

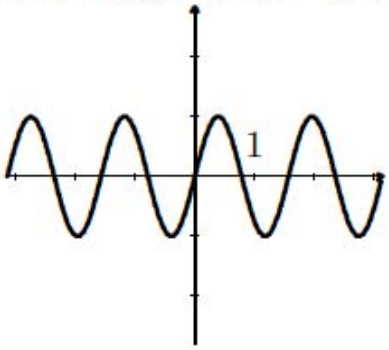
Problem: 24

$1 - \cos^2 x =$

- ☐ $\sin^2 x$
- ☐ 1
- ☐ $\tan^2 x$
- ☐ $\frac{1}{2}$

Problem: 25

Which of the following functions is best described by this graph? Note that the values of x range from $-\pi$ to π.



- ☐ $\sin(2x)$
- ☐ $\sin(4x)$
- ☐ $\sin(x)$
- ☐ $4\sin(x)$

Problem	Answer	Problem	Answer
1	B	**21**	D
2	C	**22**	B
3	B	**23**	B
4	A	**24**	A
5	C	**25**	B
6	C		
7	D		
8	C		
9	A		
10	B		
11	D		
12	D		
13	B		
14	A		
15	B		
16	C		
17	D		
18	D		
19	A		
20	C		