

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	
2		22	
3		23	
4		24	
5		25	
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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

$1 \leq x \leq 3$

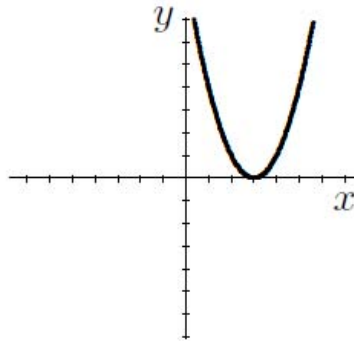
$-3 \leq x \leq -1$

$0 \leq x \leq 1$

$3 \leq x \leq 5$

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?

$x^4 + x^2$

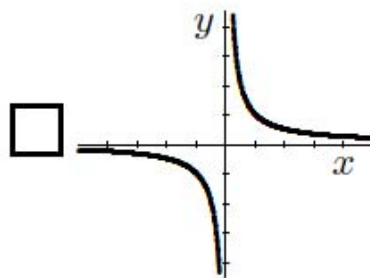
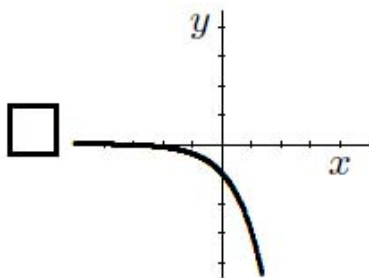
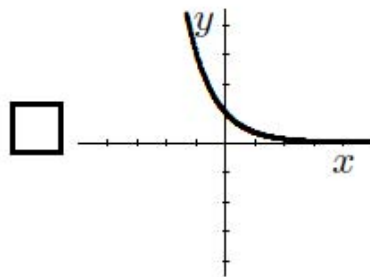
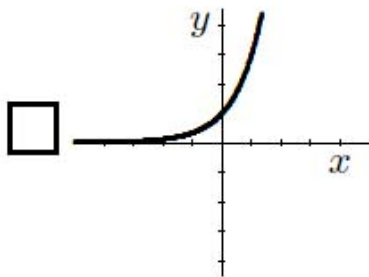
$(x + 2)^6$

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, $x^3 + 3x^2 - x - 3 =$

$(x - 1)(x + 1)(x + 3)$

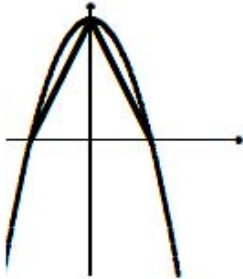
$x^3 + 3x^2 - x - 3$

$(x^2 - 1)(x + 3)$

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

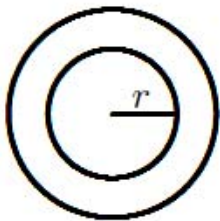
Let $g(x) = \frac{2x+1}{x+3}$. Determine $g(x+4)$.

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

$$1 - \cos^2 x =$$

$\sin^2 x$

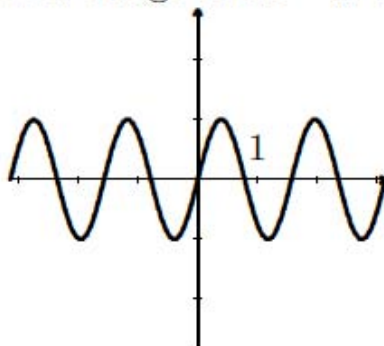
1

$\tan^2 x$

$\frac{1}{2}$

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		