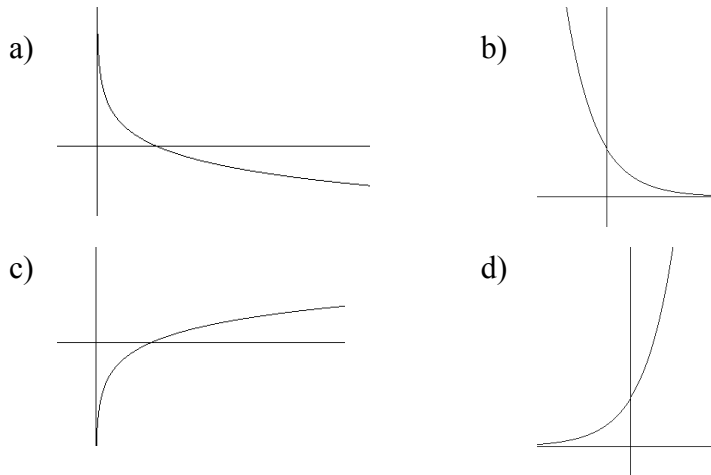


Name \_\_\_\_\_ Date \_\_\_\_\_

**Part A : Multiple choice (choose the best response)**1. Find the coordinates of the point where the function  $y = 8^x - 2$  crosses the y-axis.

- a) (0, 6)                      b) (0, -1)                      c) (0, 1)                      d) (0, -2)

2. If  $f(x) = \ln x$ , which graph would represent the graph of  $y = f^{-1}(x)$ .3. Which of the following is the simplified form of  $\log(x + 2) - 2 \log y$ ?

- a)  $\log\left(\frac{x+2}{2y}\right)$                       b)  $\log(x+2-y^2)$                       c)  $\log\left(\frac{x+2}{y^2}\right)$                       d)  $\log\left(\frac{2x}{y^2}\right)$

4. Which is the exact value of  $\log_3 5$ .

- a)  $\log 5 - \log 3$                       b)  $\frac{\log 5}{\log 3}$                       c)  $\frac{\log 3}{\log 5}$                       d) none of these solutions

5. If  $\log_a b^2 = 12$ , find the value of  $\log_a b$ .

- c)  $\sqrt{12}$                       d) 6                      a) 36                      b) 144

6. Find the domain of  $f(x) = \log_4(3 - x) + 1$ .

- a)  $x < 3$                       b)  $x > 3$                       c)  $x > -3$                       d)  $x < -3$

**Part B : Short Answer (non-calculator)**

1. Solve the following equation:  $\left(\frac{1}{3}\right)^{2x-1} = 9^{3x}$

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2. Evaluate the following expression:  $\log_2 \sqrt{8}$

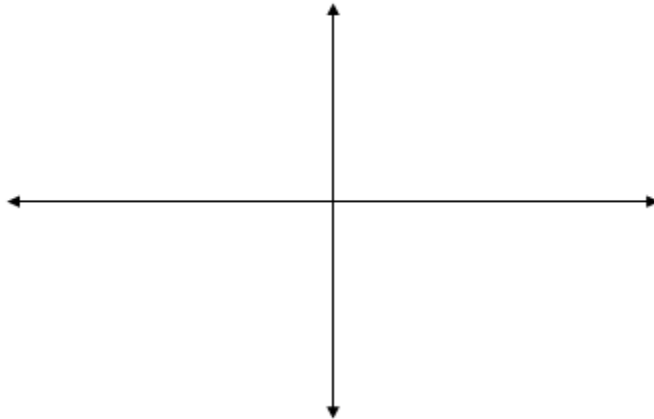
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3. Estimate the value of  $\log_6 35$ . Justify your reasoning.

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4. Sketch the graph of  $y = \log_3 x$ . Clearly indicate at least 2 points on the graph.

/2

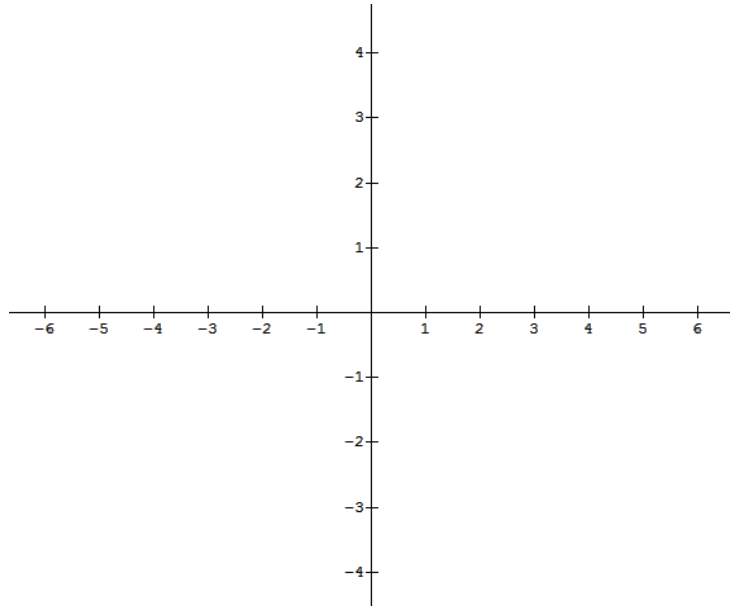


**Part C : Long answer (NO CALCULATOR)**

1. a) Sketch the following graph.

$$y = \log_2(3 - x) + 2$$

/3



b) Find the exact values of the  $x$  and  $y$ -intercepts algebraically. Show your work.

/2

2. Solve:  $\log x + \log(x - 9) = 1$

/3

**Part D: Long answer (WITH CALCULATOR)**

Name : \_\_\_\_\_

1. Solve:  $3^{2x-3} = 5(2^{5x+3})$

/4

2. On January 1<sup>st</sup> 1989, the population of Steinbach was 16 000. Exactly 10 years later, the population was 23 000. In which calendar year will the population exceed 30 000 people if the rate of increase remains constant?

$$P = P_0 e^{rt}$$

$P_0 =$  Initial Population

$P =$  Final Population

$t =$  Time in years

$r =$  rate of increase

/4

3. M. Tougas deposits \$550 every month in a bank account that returns an annual interest rate of 4.8% compounded monthly. How many deposits of \$550 are necessary to obtain a balance of at least \$100 000?

Use the formula  $VF = \frac{C[(1+i)^n - 1]}{i}$

*VF : Final Value*

*n : Number of deposits*

*C : Value of monthly deposit*

*i : Interest rate per period*

/3

4. What is the half-life, in hours, of a substance that has a rate of change of -0,04315?

/3