Name:_____

1.) Solve for x: $x + \dfrac{8}{x} = 6$

2.) Solve for x: $\dfrac{-2x}{x+2} + \dfrac{x}{3} = \dfrac{4}{x+2}$

3.) Determine the intervals for: $x^2 - x - 6 < 0$

4.) Determine the intervals for: $\dfrac{x+2}{x-5} > 0$

Without the use of a calculator, find the following for the functions listed:

$f(x) =$	V.A.	H.A.	S.A.	x-intercepts	y-intercept	Holes	Domain	$x \to \infty,$ $f(x) \to$	$x \to -\infty,$ $f(x) \to$
5.) $\dfrac{x^2-9}{x-1}$									
6.) $\dfrac{x+2}{x^2-2x-8}$									
7.) $\dfrac{x^2+x-6}{x+3}$									
8.) $\dfrac{2x^2+2x-24}{x^2-4x+3}$									

Solve for x:

9.) $|5x-3| = 7$

11.) $\left|\dfrac{1}{4}x+3\right| \le 1$

10.) $|5x+1| + 6 = 4$

Solution: _____

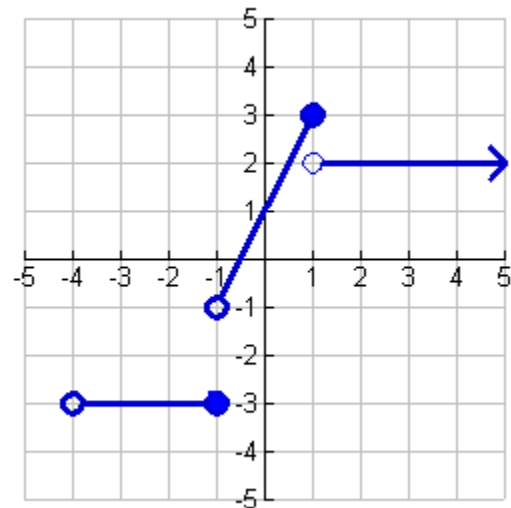**Use the function** $f(x) = \begin{cases} 3x+2, x \le 2 \\ 1-x, x > 2 \end{cases}$ **to evaluate the following:**

12.) $f(5) =$ _____

13.) $f(0) =$ _____

14.) $f(2) =$ _____

15.) Write the equations defining the piecewise function

$f(x) = \left\{ \begin{array}{l} \underline{\hspace{5cm}} \\ \\ \underline{\hspace{5cm}} \\ \\ \underline{\hspace{4cm}} \end{array} \right.$

Given log₇ 5 ≈0.8 and log₇ 9 ≈ 1.1, approximate the value of each logarithm.

16.) $\log_7 45$

17.) $\log_7 \dfrac{5}{9}$

18.) $\log_7 35$

Write as a single logarithm:

19.) $\log_8 15 - \log_8 10$

20.) $3\log_3 y + 2\log_3 x$

21.) $\log_5 y - 3 \log_5 r + 2 \log_5 x$

Solve:

22.) $2 \log_3 x = \log_3 (8-2x)$

23.) $\log x = \log 16 - \log 12$

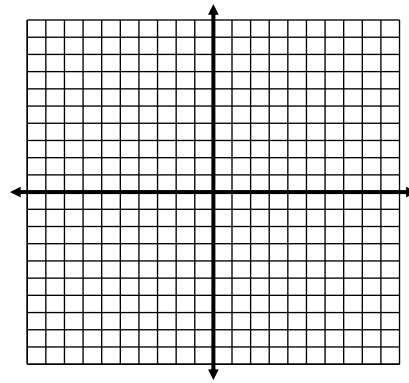24.) $3 \log_3 x = \log_3 64$

Evaluate:

25.) $\log_3 81$

26.) $\log_2 16$

27.) $\log_{32} 8$

28.) Graph the following function and state the transformations from the parent function $y = \log_4 x$.

$y = \log_4 (x + 3) - 2$

Convert to exponential form:

29.) $\log_4 \frac{1}{256} = -4$

30.) $\log_2 64 = 6$

Convert to logarithm form:

31.) $9^4 = 6561$

32.) $6^{-3} = \frac{1}{216}$

33.) How long does it take $1,000 to grow to $10,000 if it is invested at an annual interest rate of 9% compounded continuously?

34.) Write the following in logarithmic form: $(64)^{-\frac{4}{3}} = \frac{1}{256}$?

35.) Solve: $9^{x-1} = 27^{x-4}$

36.) Suppose you invest $5000 in an account that pays 7.3% annual interest **compounded daily**. At the end of three years how much money can you expect in the account?

37.) One hundred students out of 2200 at a school were surveyed. Three said they would joined the armed forces immediately upon graduating high school. Predict the number of students in the population that would answer similarly?

38.) The average on the tests in our class and Mrs. Einstein's class were normally distributed on the last test we gave. The average in our class was 75 with a standard deviation of 7. The average on Mrs. Einstein's test was 80 with a standard deviation of 5. If you and your friend from Mrs. Einstein's class both made a 95 on the test, who had the better score in comparison to the rest of their class?

Your z score=_____ Your friend's z score=_____ Who did better?_____

39.) To find the mean price of beef around the US, stores across the country were randomly chosen to survey. The survey of 400 stores found the mean price to be $5.80/lb with a standard deviation of $0.50.

    a) Find the 95% confidence interval for the above data.

    b) Find the 99% confidence interval for the above data.

40.) A normal distribution has a mean of 56 and a standard deviation of 5. Draw a normal curve to represent this.
    a) What percentage of values lie between 44 and 59?_____

    b) What percentage lie above 50?_____

    c) What percentage lie below 54?_____

Arithmetic:	Geometric:	Geometric Series:
Recursive Formula	**Recursive Formula**	$S_n = \dfrac{a_1(1-r^n)}{1-r}$
$a_1 = \#$	$a_1 = \#$	
$a_n = a_{n-1} + d$	$a_n = a_{n-1}(r)$	
Explicit (Closed) Formula	**Explicit (Closed) Formula**	**Arithmetic Series:**
$a_n = a_1 + d(n-1)$	$a_n = a_1(r)^{n-1}$	$S_n = \dfrac{n}{2}(a_1 + a_n)$
or $a_n = a_0 + dn$		

Determine whether each sequence is *arithmetic* or *geometric*. Then find the eighth term.

41.) -72, -58, -44, -30, -16, -2, ….

42.) $-\dfrac{5}{6}, 5, -30, 180, -1080, 6480, \ldots$

43.) Find the closed/explicit formula of the sequence: 3, 9, 15, 21, 27, 33, …

44.) Write the explicit formula of the sequence:

        162, 54, 18, 6, 2, . . .

Find the series to the given term.

45.) 1 + 4 + 16 + 64 + 256 + ….; S_{12}

46.) $\displaystyle\sum_{k=1}^{13}(4-7k)$

47.) An <u>arithmetic</u> sequence has the following recursive model:
    $a_1 = 7;\ a_n = a_{n-1} - 5$, find the <u>first 6 terms</u>.