MATH-AII

SOL PRACTICE 2014

[Exam ID:1ER5ND

Exam not valid for Paper Pencil Test Sessions

1 $$\frac{6x-6}{9(x+1)^2} \cdot \frac{4x+4}{5x-5}$$

Which of the following is equivalent to the expression shown for non-zero denominators?

A $\frac{2}{15(x+1)(x-1)}$

B $\frac{8}{3(x+1)}$

C $\frac{6x+2}{3(7x-3)}$

D $\frac{8}{15(x+1)}$

2 **For non-zero denominators, which of the following is equivalent to**

$$\frac{1}{a} - \frac{2a}{a+1}?$$

A $\frac{1-2a}{1}$

B $\frac{1-2a}{a(a+1)}$

C $\frac{-2a^3+1}{a(a+1)}$

D $\frac{-2a^2+a+1}{a(a+1)}$

3 **For non-zero denominators, which of the following is equivalent to** $\left(\frac{\frac{6(x-3)(x+3)}{2(x+5)}}{\frac{3(x+3)}{2x}}\right)$**?**

A $\frac{12x(x-3)}{x+5}$

B $\frac{2x(x-3)}{x+5}$

C $\frac{2(x-3)}{x+5}$

D $\frac{x(x-3)}{x+5}$

4 **For non-zero denominators, which of the following is equivalent to** $\frac{8x^2}{2y} \bullet \frac{3xy^3}{x^4y}$ **?**

A $\frac{12x}{y}$

B $12x^7y^5$

C $\frac{12}{xy}$

D $\frac{12y}{x}$

5 **Which expression is equivalent to** $2\sqrt{12}-3\sqrt{27}+2\sqrt{48}$**?**

A $4\sqrt{3}$

B $\sqrt{3}$

C $3\sqrt{3}$

D $2\sqrt{3}$

6 **Which is simplified form of the following expression?**

$$32^{\frac{3}{5}}$$

A 6553.6

B 8

C 6

D $\sqrt[5]{96}$

7 **Look at the table.**

Expression 1	$\sqrt{49x^6yz^3}$
Expression 2	$\sqrt[4]{28x^{12}yz^3}$
Expression 3	$\sqrt[4]{2401x^{12}yz^3}$
Expression 4	$\sqrt[3]{343x^9yz^4}$

Which expression is equivalent to $7x^3y^{\frac{1}{3}}z^{\frac{4}{3}}$?

A Expression 4
B Expression 1
C Expression 2
D Expression 3

8 Directions: Click on a box to choose each factor you want to select. You must select all correct factors.

Identify the factors of the polynomial function $32x^3 - 108 = 0$.

4	$(16x^2 + 24x - 36)$	$4x$	$(2x + 3)$
$(8x + 12)$	$(4x^2 + 6x + 9)$	16	$(2x - 3)$

9 **Which of the following is equivalent to the factored expression $(2x + 3)^3$?**

A $8x^3 + 27$
B $6x^3 + 36x^2 + 48x + 27$
C $8x^3 + 36x^2 + 54x + 27$
D $8x^3 + 36x^2 + 54x + 12$

10 **Which is the factored form of $9x^2 + 24xy + 16y^2$?**

A $(3x + 4y)(3x - 4y)$

B $(3x + 4y)^2$

C $(3x - 4y)^2$

D $(3x - 16y)^2$

11 **When completely factored,**

$$125c^2 - 80$$

is equivalent to —

A $5(5c - 4)(5c + 4)$

B $5(5c - 4)^2$

C $5(4c - 5)(4c + 5)$

D $5(5c + 4)^2$

12 **What number does i^{23} equal?**

A $-i$

B 1

C -1

D i

13 **Which is an equivalent form of the following expression?**

$$\sqrt{-9} - 2\sqrt{-4}$$

A $-5i$

B $-7i$

C $3 + 8i$

D $-i$

14 **Which is a true statement?**

A $\sqrt{-1} = i$

B $1 = -i$

C $-i = \sqrt{-1}$

D $i = \sqrt{1}$

15 **Which of the following represent the solutions to $|4x + 9| > 11$?**

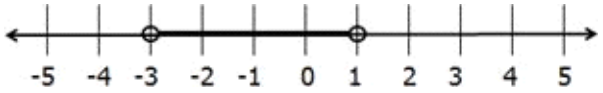
A $x < -5$ or $x > \frac{1}{2}$

B $\frac{-1}{2} < x < 5$

C $x < \frac{-1}{2}$ or $x > 5$

D $-5 < x < \frac{1}{2}$

16 **Which inequality best represents this graph?**



A $|x - 1| < 4$
B $|x - 1| < 2$
C $|x + 1| < 2$
D $|x + 1| > 2$

17 **Which number is NOT a solution for $|4x - 2| < 8$?**

A 0
B -1
C 5
D 2

18 **What is the solution set of the equation?**

$$-11x^2 + 2x = 10$$

A $\left\{\frac{1+\sqrt{109}}{22}, \frac{1-\sqrt{109}}{22}\right\}$

B $\left\{\frac{2i\sqrt{109}}{11}, \frac{-2i\sqrt{109}}{11}\right\}$

C $\left\{\frac{2\sqrt{109}}{11}, \frac{-2\sqrt{109}}{11}\right\}$

D $\left\{\frac{1+i\sqrt{109}}{11}, \frac{1-i\sqrt{109}}{11}\right\}$

19 **How many solutions does this quadratic equation have?**

$$2x^2 + 4x - 1 = 0$$

A One solution
B Two solutions
C Infinite solutions
D No solution

20 **Which is the solution set for $(x+5)^2 = 0$?**

A { -5, 5 }
B { -5 }
C { 5 }
D { 25 }

21 **What is the solution to the following equation?**

$$\frac{9}{x-3} = \frac{x-4}{x-3} + \frac{1}{4}$$

A $x = 11$
B $x = \frac{43}{5}$
C $x = \frac{55}{2}$
D $x = \frac{28}{5}$

22 **What is the solution to the following equation?**

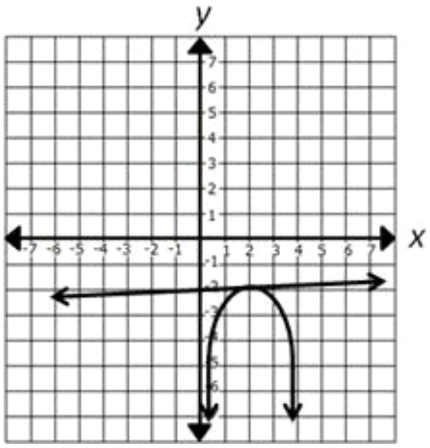
$$\frac{x}{x+1} = \frac{2}{3}$$

A $x = 1$
B $x = 2$
C $x = -1$
D $x = -2$

23 **What is the solution to $\sqrt[3]{x - 4} = -5$?**

A $x = -121$
B $x = 129$
C $x = -1$
D $x = 29$

24 **Which is the apparent solution set to the system of equations shown on the graph?**



A { (2, -2) }
B { (0, -3) }
C { (0, -6) }
D { (-2, 2) }

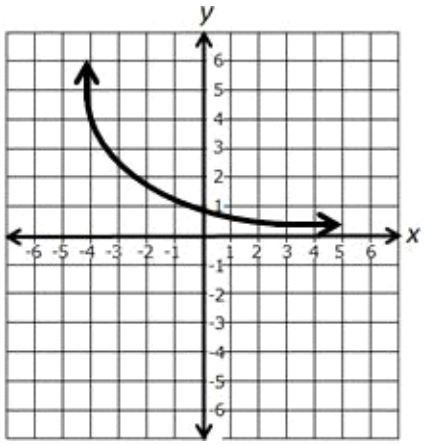
25 Directions: Click on a box to choose each number you want to select. You must select all correct numbers.

Identify the *x* -coordinates for the solutions to this system of equations.

$$\begin{cases} 2x^2 - 2x + 3 = y \\ y = x^2 + 5x - 7 \end{cases}$$

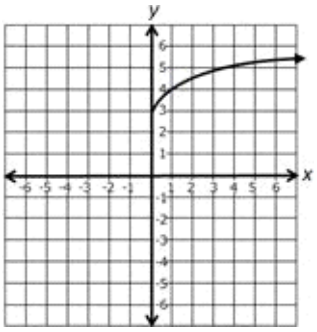
-6	-1	1	2	5	7

26 **The graph below shows which type of function?**



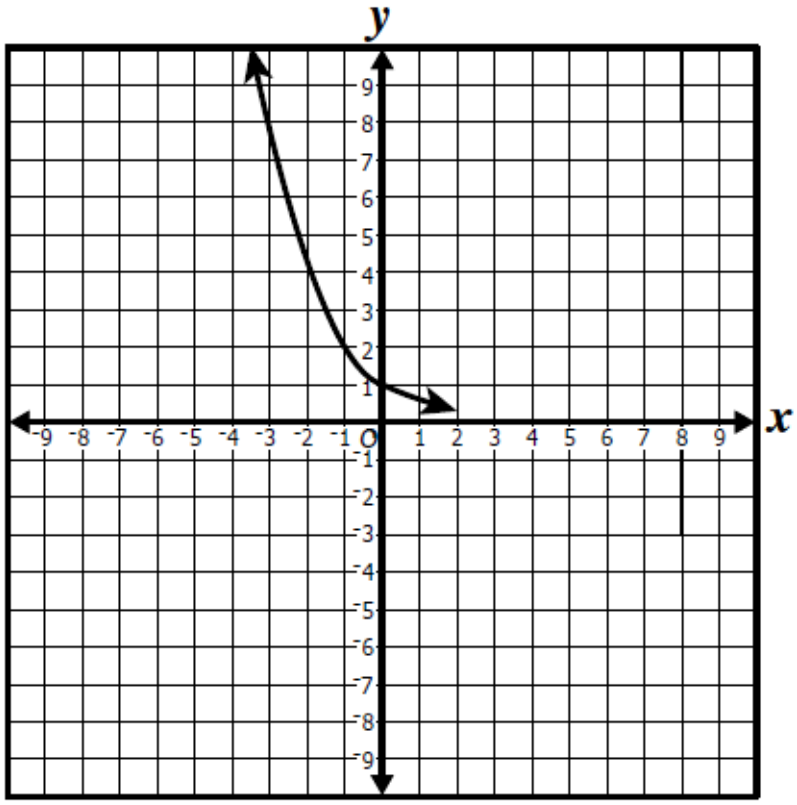
A Absolute Value
B Step
C Polynomial
D Exponential

27 **Which of the following is the parent function of the function graphed?**



A $f(x) = \sqrt{x}$
B $f(x) = x^2$
C $f(x) = \frac{1}{x}$
D $f(x) = \sqrt[3]{x}$

28 **The graph shown *most* accurately represents which of the following functions?**



A $f(x)=\left(\frac{1}{2}\right)^x$

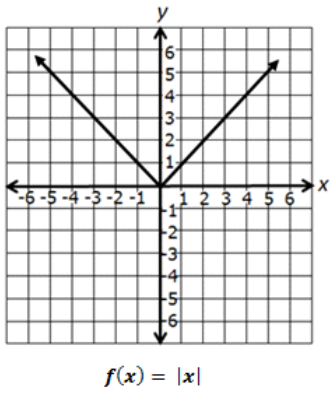
B $f(x)=-2^x$

C $f(x)=2^x$

D $f(x)=-\left(\frac{1}{2}\right)^x$

29 Directions: Click and drag each statement to the correct box.

The function $f(x) = |x|$ is translated left 2 units and down 5 units. Identify each true and false statement.



$f(x) = |x|$

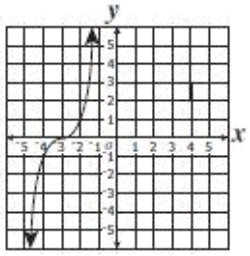
True statement for $f(x) = |x|$: The vertex is (0, 0).

True statement for transformed function: The x - intercepts are (-7, 0) and (3, 0).

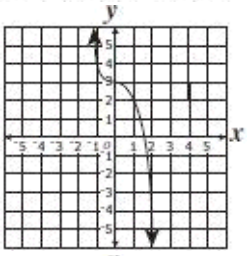
False statement for transformed function: The y - intercept is (0, -5).

30 **Which graph most accurately represents the function $f(x) = -x^3 + 3$?**

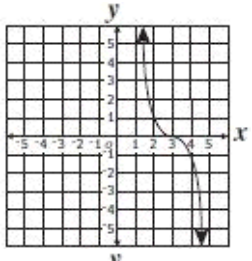
A



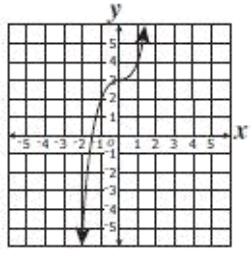
B



C

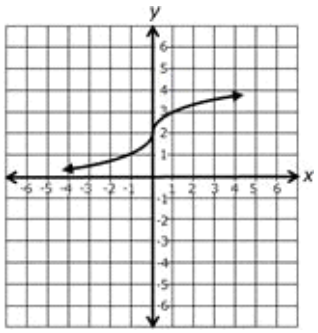


D

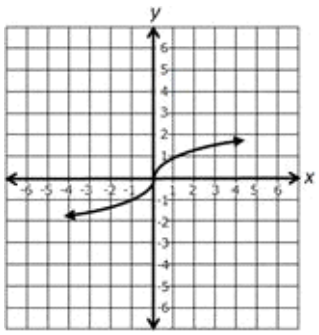


31 **Which of the following graphs could represent $f(x) = 2\sqrt[3]{x}$?**

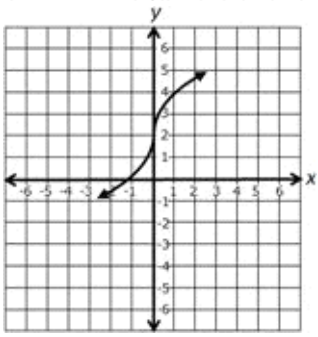
A



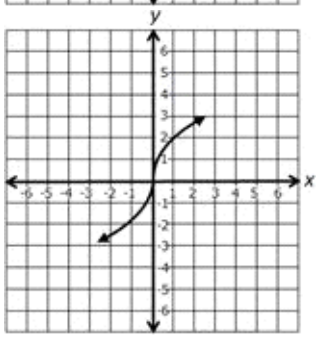
C



B



D



32 **$y = x^2 - 8x + 15$**

What are the x-intercepts of the graph that represents the equation?

A (-8, 0) and (15, 0)
B (0, -8) and (0, 15)
C (0, 3) and (0, 5)
D (3, 0) and (5, 0)

33 **Which is a zero of $f(x) = 6x^2 + 5x - 6$?**

A $\frac{3}{2}$

B $\frac{-2}{3}$

C $\frac{-3}{2}$

D 6

34 **What is the domain of the function defined by the following equation?**

$$f(x) = \frac{1}{x}$$

A {All real numbers greater than zero}
B {All non-zero real numbers}
C {All real numbers}
D {All real numbers less than zero}

35 **Which number is a zero of $f(x) = \log(4x - 1)$?**

A $\frac{7}{2}$

B $\frac{11}{4}$

C $\frac{1}{2}$

D $\frac{1}{4}$

36 **Which of the following functions of x has the greatest number of roots in the complex number system?**

A $y = -x + 3$
B $y = x^2 - 4x + 2$
C $y = x^3 + x^2 - 1$
D $y = x + x^2$

37 Directions: Type your answer in the box.

Identify one zero for the given polynomial function.

$$h(x) = 2x(x + 2)(x - 3)^2$$

38 **Which function has a y-intercept of (0, 3)?**

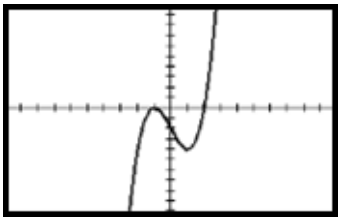
A $f(x) = \frac{1}{x - 1}$

B $f(x) = \frac{1}{x + 1}$

C $f(x) = \frac{3}{x + 1}$

D $f(x) = \frac{3}{x - 1}$

39 **Over which interval is the function decreasing?**



A $(-\infty,\infty)$

B $(1,\infty)$

C $(-\infty,-1)$

D $(-1,1)$

40 Directions: Type your answer in the box.

Given the graph $y = \frac{x + 1}{x - 2}$, determine the equation of the vertical asymptote.

$x =$

41 Directions: Click and drag each equation to the correct box.

Place each equation of horizontal asymptote next to the correct function.

Equation	Equation of Horizontal Asymptote
$f(x) = \frac{x+1}{x-1}$	$y = 1$
$g(x) = \frac{x(x-1)}{x-1}$	No horizontal asymptote
$h(x) = \frac{x}{2x-1}$	$y = \frac{1}{2}$
$d(x) = \frac{5}{x-2}$	$y = 0$

42 **Which of the following describes the end behavior of $h(x) = x^5 + 4x^2 + 2$ as x approaches negative infinity?**

A y approaches -2
B y approaches 2
C y approaches positive infinity
D y approaches negative infinity

43 **Which of the following represents the inverse of $y = 2x + 4$?**

A $y = \frac{x - 4}{2}$
B $y = -2x - 4$
C $y = 2x - 4$
D $y = \frac{-x + 4}{2}$

44 **If $f(x) = 2x^2 - 1$ and $g(x) = x + 2$, which is $f(g(x))$?**

A $2x^2 + 8x + 7$

B $2x^2 + 8x + 8$

C $2x^2 + 8x + 9$

D $2x^2 - 1$

45 Directions: Type your answer in the box.

Identify a zero of multiplicity greater than 1 for the given polynomial function.

$$h(x) = 2x(x + 2)(x - 4)^2$$

46 **Bill rode his bike to a store 5 kilometers from his house. The table shows the distance from the store paired with the number of minutes after leaving his house.**

Minutes (x)	Kilometers from Store (y)
0	5
3	4
5	3.2
8	2.9

Which equation best models a line of best fit for the data?

A $y = -0.3x + 6.4$

B $y = -0.2x + 4.5$

C $y = -0.2x + 6.1$

D $y = -0.3x + 4.9$

47 **Based on a line of best fit for the data, which is the best prediction for y when $x = -4$?**

x	y
2	5
0	1
−1	−1
8	17
4	9

A 7
B -9
C -8
D -7

48 **The power (P) generated for a translational motion varies jointly with the acting force (F) over a distance (d) achieved and inversely with the time(t) taken to perform this motion. If k is the constant of proportionality, which formula represents this relationship?**

A $P = \frac{tk}{Fd}$ **B** $P = \frac{Ftk}{d}$ **C** $PF = \frac{dk}{t}$ **D** $P = Fdtk$ **E** $P = \frac{Fdk}{t}$

49 **The amount of ice cream dispensed from a machine at an ice cream shop is normally distributed. If the machine is used 800 times in a day, how many times did the machine dispense an amount that falls within three standard deviations from the mean amount?**

A 267
B 544
C 798
D 760

50 **In a normal distribution, what is the probability that a data value will fall above the data value associated with a z -score of -0.56?**

A 0.2776%
B 27.76%
C 28.77%
D 71.23%
E 72.24%

51 Directions: Type your answer in the box.

Charges for airline pet shipping fees are normally distributed with a mean of $100 and standard deviation of $25. What percent of the airlines charge over $125 to ship a pet? Round to the nearest whole percent.

%

52 **From an arrangement of 15 different colored flowers, 7 will be chosen to create a corsage. How many different combinations could be formed?**

A 6,435
B 105
C 4,633,200
D 259,459,200

53 Directions: Click on a box to choose each answer you want to select. You must select all correct answers.

Identify each situation that can be answered using a permutation.

Five athletes are competing in a race. How many ways could these athletes finish in first place through fifth place?
A 5 person team will be selected from 11 different applicants. How many possible teams can be created?
The code to a safe consists of 3 different digits. How many different possibilities are there for the combination?
Carol has a choice of 3 fruits from a menu of 10 fruits for her salad. How many salad combinations can Carol create?

54 **Sally has a new locker combination that consists of three unique numbers from 0 to 39 and is fearful that someone will figure it out. A friend assures her that a person would have a hard time guessing the exact combination that Sally chose. How many different possibilities are there for Sally's new combination?**

A 19,760
B 9,880
C 59,280
D 117

55 **If $a_n = 11 \bullet 5^{n-1}$, then what is a_{10} ?**

A 4,296,875
B 110
C 107,421,875
D 21,484,375

56 **What is the value of**

$$\sum_{n=0}^{3} 2^{n+1}?$$

A 28
B 30
C 12
D 14

57 **Which explicit formula generalizes the given sequence?**

{4, 7, 10, 13, 16, ...}

A $a_n = 3n + 3$
B $a_n = n + 1$
C $a_n = 3n + 1$
D $a_n = n + 3$

58 **Which of the following sets represent a geometric sequence?**

A {-3, 0, 4, 9, 15,...}
B {2, 5, 9, 14, 20,...}
C {-5, -2, 1, 4, 7,...}
D {1, 3, 9, 27, 81,...}

59 **The formula for the sum of an infinite geometric series follows.**

For |r|<1, S = $\frac{a_1}{1-r}$

What is the sum of the following infinite series?

$$\frac{2}{3} + \frac{1}{3} + \frac{1}{6} + \frac{1}{12} \ldots$$

A $\frac{5}{4}$
B 1
C $\frac{4}{3}$
D $\frac{1}{24}$