Trig Midterm Review 2019-20

Name _____

_____1. If f(x) = 3x – 1 and g(x) = 2x – 1, what is f(g(2))?
A. 8 B. 9 C. 14 D. 13

_____2. If f(x) = 3x – 10 and g(x) = 2x + 1, what is f(g(x))?
A. 6x – 19 B. 6x – 13 C. 6x + 13 D. 6x – 7

_____3. What is the domain of f(x) = $\sqrt{x-3}$?
A. $x \neq 3$ B. $x > 3$ C. $x \geq 3$ D. None of the above

_____4. What is the domain of f(x) = $\frac{x^3}{x-3}$?
A. $x \neq 3$ B. $x > 3$ C. $x \geq 3$ D. None of the above

_____5. What is the domain of f(x) = $x^2 - 9$?
A. $x \neq 3$ B. $\mathbb{R}$ C. $x \geq 3$ D. $x > 3$

_____6. $\sum_{n=-2}^{1} 2n-1$?
A. -10 B. -9 C. -8 D. -6

_____7. What is the slope from (1, 4) to (3, 10)?
A. 6 B. 2 C. 3 D. -2

_____8. What is the slope from (n, 6) to (n + 2, 7)?
A. 1 B. $\frac{1}{2}$ C. 0 D. 2

_____9. What is the distance from (-3,-2) to (1, -6)?
A. $4\sqrt{2}$ B. $3\sqrt{2}$ C. $2\sqrt{3}$ D. $2\sqrt{2}$

_____10. Which equation below is not in standard form?
A. 3x – y = 5 B. 4x + y = -3 C. -2x + y = 9 D. x – y = -1

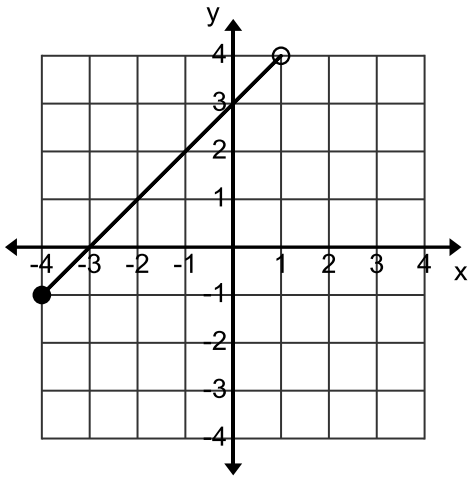
_____11. Which is the equation of the line with a slope of 4 and that goes through (2, 5)?
A. y = -4x – 3 B. y = 4x – 3 C. y = 4x + 3 D. y = -4x + 3

_____12. Which is the equation of the line that goes through (1, 4) and (3, 10)?
A. y = 3x – 2 B. y = 3x + 2 C. y = 3x + 10 D. y = 3x + 1

_____13. Which is the equation that is parallel to y = 3x – 5 and goes through (3, 4)?
A. y = 3x – 1 B. y = 3x – 2 C. y = 3x + 1 D. y = 3x – 5

_____14. Which is the equation that is perpendicular to y = -2x + 4 and goes through (4, 1)?

A. $y=\frac{1}{2}x+1$ B. $y=2x-7$ C. $y=-\frac{1}{2}x+1$ D. $y=\frac{1}{2}x-1$



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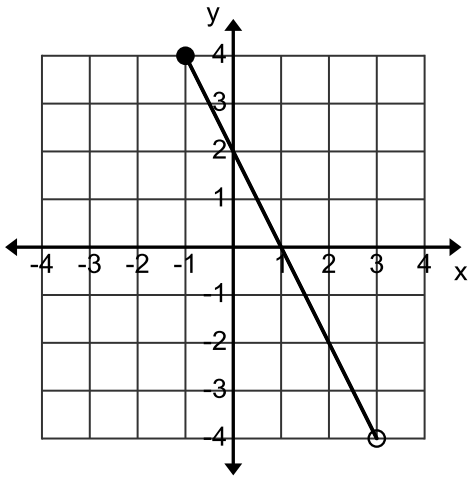


II

_____15. What is the **domain** of the graph I above?

A. $\mathbb{R}:-1<x\le 4$ B. $\mathbb{R}:-1\le x<4$ C. $\mathbb{R}:-4<x\le 1$ D. $\mathbb{R}:-4\le x<1$

_____16. What is the **range** of the graph I above?

A. $\mathbb{R}:-1<y\le 4$ B. $\mathbb{R}:-1\le y<4$ C. $\mathbb{R}:-4<y\le 1$ D. $\mathbb{R}:-4\le y<1$

_____17. What is the **domain** of the graph II above?

A. $\mathbb{R}:-1<x\le 3$ B. $\mathbb{R}:-1\le x<3$ C. $\mathbb{R}:-4<x\le 4$ D. $\mathbb{R}:-4\le x<4$

_____18. What is the **range** of the graph II above?

A. $\mathbb{R}:-1<y\le 3$ B. $\mathbb{R}:-1\le y<3$ C. $\mathbb{R}:-4<y\le 4$ D. $\mathbb{R}:-4\le y<4$

A. $\begin{cases} y=3x-5 \\ y=2x-1 \end{cases}$ B. $\begin{cases} y=3x-1 \\ y+x=15 \end{cases}$ C. $\begin{cases} 2x+3y=8 \\ 4x+2y=12 \end{cases}$ D. $\begin{cases} 2x-y=8 \\ 3x+y=12 \end{cases}$

_____19. What is the value of y in System A above.

A. y = 11 B. y = 7 C. y = 6 D. None of the above

_____20. What is the value of y in System B above.

A. y = 10 B. y = 4 C. y = 6 D. None of the above

_____21. What is the value of y in System C above.

A. y = 1 B. y = 2 C. y = 7 D. None of the above

_____22. What is the value of y in System D above.

A. y = 1 B. y = 4 C. y = 2 D. None of the above

$A=\begin{bmatrix}2 & 3\\ 2 & 4\end{bmatrix}$ $B=\begin{bmatrix}3 & -2\\ -1 & -4\end{bmatrix}$ $C=\begin{bmatrix}2 & 3\\ 5 & 9\end{bmatrix}$ $D=\begin{bmatrix}2 & 3 & 1\end{bmatrix}$ $E=\begin{bmatrix}3\\ 4\\ 2\end{bmatrix}$

_____23. What is the A + B? **NO CALCULATOR ALLOWED!**

A. -2 B. 4 C. 2 D. None of the above

_____24. What is 3A? **NO CALCULATOR ALLOWED!**

A. $\begin{bmatrix}6 & 9\\ 6 & 12\end{bmatrix}$ B. $\begin{bmatrix}6 & 9\\ 6 & 15\end{bmatrix}$ C. $\begin{bmatrix}6 & 9\\ 8 & 12\end{bmatrix}$ D. None of the above

_____25. What is AB? **NO CALCULATOR ALLOWED!**

A. $\begin{bmatrix}3 & -8\\ 2 & -20\end{bmatrix}$ B. $\begin{bmatrix}3 & -16\\ 2 & -12\end{bmatrix}$ C. $\begin{bmatrix}6 & -6\\ -2 & -16\end{bmatrix}$ D. None of the above

_____26. What is BC? **NO CALCULATOR ALLOWED!**

A. $\begin{bmatrix}2 & 1.5\\ -1 & 1\end{bmatrix}$ B. $\begin{bmatrix}2 & .5\\ 1 & -1\end{bmatrix}$ C. $\begin{bmatrix}2 & 1.5\\ -1.5 & 1\end{bmatrix}$ D. None of the above

_____27. What is DE? **NO CALCULATOR ALLOWED!**

A. $[8]$ B. $[18]$ C. $[20]$ D. None of the above

_____28. What is the domain of f(x) = $\sqrt{x+6}$?

A. $x \neq -6$ B. $x > -6$ C. $x \geq -6$ D. $\mathbb{R}$

_____29. What is the domain of f(x) = $\frac{2x}{2x-6}$?

A. $x \neq 3$ B. $x > 3$ C. $x \geq 3$ D. $\mathbb{R}$

_____30. What is the domain of f(x) = $\sqrt{10-x}$?

A. $x \neq 10$ B. $x \leq 10$ C. $x \geq 10$ D. $\mathbb{R}$

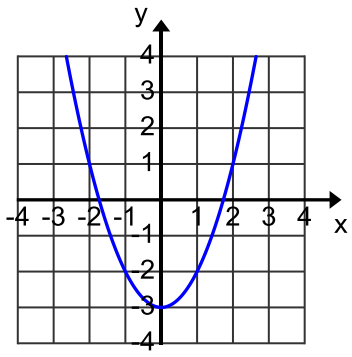
_____31. What is the domain of f(x) = $\sqrt{-2x+4}$?

A. $x \neq 2$ B. $x \leq 2$ C. $x \geq 2$ D. $\mathbb{R}$

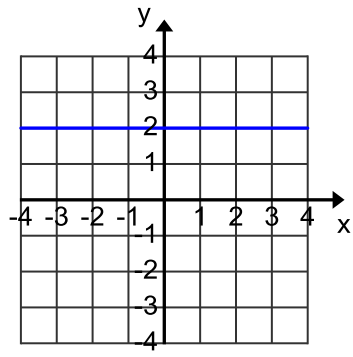
_____32. If A is a 4 x 5 matrix, B a 4 x 3 matrix, and C a 3 x 5 matrix, what matrices could be multiplied?

A. A and B B. A and C C. B and C D. All of them could b

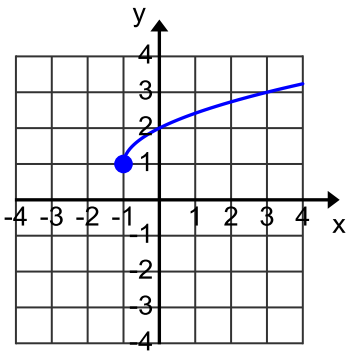
Graph 1



Graph 2



Graph 3



_____33. What is the domain of graph 1 above?
A. $x > -3$ B. $x < -3$ C. $x \geq -3$ D. $\mathbb{R}$

_____34. What is the range of graph 1 above?
A. $y > -3$ B. $y < -3$ C. $y \geq -3$ D. $\mathbb{R}$

_____35. What is the domain of graph 2 above?
A. $x > 2$ B. $x = 2$ C. $x \geq 2$ D. $\mathbb{R}$

_____36. What is the domain of graph 3 above?
A. $x \geq -1$ B. $x < -1$ C. $x \geq 1$ D. $\mathbb{R}$

_____37. What is the range of graph 3 above?
A. $y \geq -1$ B. $y < -1$ C. $y \geq 1$ D. $\mathbb{R}$

_____38. $\sum_{n=-2}^{0} n^2$?
A. -1 B. 5 C. 8 D. 0

_____39. $\sum_{n=-2}^{3} 2-n$?
A. 9 B. 11 C. 12 D. 13

_____40. From the 40 shirts I have, I must pick 5 to plan out my week of teaching. How many different looks would I have next week?
A. 65,800 B. 658,008 C. 78,960,960 D. 789,609,600

_____41. From the 20 kids in the class, I must pick 2 to represent my homeroom as Class Officers. How many possibilities exist?
A. 80 B. 190 C. 380 D. 720

_____42. If a student body has 82 students, in how many different ways could the class elect a President, Vice President, and Secretary?
A. 72,000 B. 88,560 C. 322,240 D. 531,360

_____43. I have a safe in my house that has a key pad on it with the digits 0 – 9 on it. If my combination is a 5 digit code, how many possible combinations exist?

A. 252 B. 67,000 C. 100,000 D. 212,540

_____44. Old VA license plates used to be 3 letters followed by 3 numbers. How many license plates could the state make in this manner?

A. Between 1 – 100,000 B. Between 100,001 – 1,000,000
C. Between 1,000,001- 20,000,000 D. Over 20,000,000

_____45. How many 5 card hands can be dealt from a deck of cards? (For you non-card people, there are 52 cards in a deck.)

A. Between 1 – 1,000,000 B. Between 1,000,001 – 5,000,000
C. Between 5,000,001 – 10,000,000 D. Over 10,000,000

_____46. There are 10 girls and 8 boys up for the "Hickam Award." In how many ways can 2 girls and 3 boys be selected to receive this prestigious award?

A. 101 B. 212 C. 2520 D. 3620

_____47. If f(x) = 2x and g(x) = 5x + 10, what is f(g(x))?

A. 10x + 10 B. 10x + 20 C. 20x + 10 D. 10x – 10

_____48. What would the slope of the line that is perpendicular to 2x – 4y = 10 be?

A. 2 B. -2 C. ½ D. – ½

_____49. Which equation below is the quadratic equation?

A. $x = \frac{b \pm \sqrt{b^2 - 4ac}}{2a}$ B. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2c}$ C. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

_____50. What is the approximate distance from (1, 4) and (3, 10)?

A. 6.3 B. 7.8 C. 11.2 D. None of the above

_____51. What is the equation of the line, in slope intercept form, that goes through the point (8, 4) and has a slope of -1.

A. y = -x – 8 B. y = -x + 4 C. y = -x + 12 D. None of the above

_____52. Give the equation of the line in standard form that is perpendicular to y = -4x – 5 and passes through the point (-8, 2).

A. x – 4y = -16 B. 2x + 4y = -8 C. x + 8y = 8 D. None of the above

_____53. Which equation below is **not** in slope intercept form?

A. y = -2x + 6 B. y = ½ x - 5 C. -y = 2x + 6 D. y = 4x

_____54. Give the equation of the line in standard form that is parallel to 12x + 2y = 8 and passes through the point (-1, 2).

A. 6x – y = -8 B. 6x + y = -4 C. 6x – 2y = -10 D. None of the above

_____55. $\sum_{n=2}^{4}(2^n - 10)^n$

A. 1232 B. 1324 C. 1346 D. None of the above

_____56. $\frac{96!}{94!4!}$

A. 96 B. 360 C. 480 D. None of the above

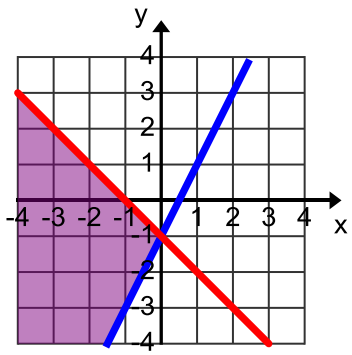
_____57. $\frac{76!}{74!3!}$

A. 450 B. 950 C. 1050 D. None of the above

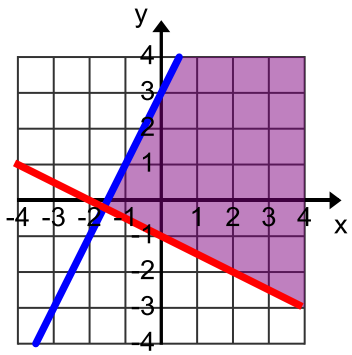
_____58. $\frac{215!}{213!}$

A. 23,220 B. 46, 010 C. 52,300 D. None of the above

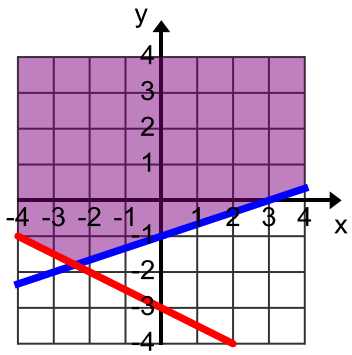
Graph 1



Graph 2



Graph 3



For 59-61, tell what is graphed in the system of inequalities above.

_____59. Graph 1 A. $\begin{cases} y \geq 2x+1 \\ y \leq -x-1 \end{cases}$ B. $\begin{cases} y > 2x-1 \\ y \leq -x-1 \end{cases}$ C. $\begin{cases} y \geq 2x-1 \\ y < -x-1 \end{cases}$ D. $\begin{cases} y > 2x+1 \\ y \leq -x-1 \end{cases}$

_____60. Graph 2 A. $\begin{cases} y \leq 2x+3 \\ y > -\frac{1}{2}x-1 \end{cases}$ B. $\begin{cases} y < 2x+3 \\ y \geq -\frac{1}{2}x-1 \end{cases}$ C. $\begin{cases} y \leq 2x+3 \\ y > -2x-1 \end{cases}$ D. $\begin{cases} y < -2x+3 \\ y \geq -\frac{1}{2}x-1 \end{cases}$

_____61. Graph 3 A. $\begin{cases} y > 3x-1 \\ y \geq -\frac{1}{2}x-3 \end{cases}$ B. $\begin{cases} y > \frac{1}{3}x-1 \\ y \geq -\frac{1}{2}x-3 \end{cases}$ C. $\begin{cases} y > -\frac{1}{3}x-1 \\ y \geq -\frac{1}{2}x-3 \end{cases}$ D. $\begin{cases} y < 3x-1 \\ y \geq -\frac{1}{2}x-3 \end{cases}$

_____62. My password to log on to my computer can be any letter or digit. If I have a passcode that is 3 characters long, how many possibilities for a passcode are there?
A. 4,666 B. 7,140 C. 71,400 D. 46,656

_____63. How many different ways can one answer a 10 question multiple choice test that has options A, B, C, and D?
A. 210 B. 2520 C. 5040 D. None of the above

_____64. Pizza Boy offers a large 3 topping pizza for $13.99 If they have 20 toppings from which you can choose, how many different possibilities can you make assuming you choose 3 different toppings?
A. 1140 B. 6840 C. 9240 D. None of the above

_____65. $\begin{bmatrix} -2 & 5 \end{bmatrix} \bullet \begin{bmatrix} 2 & 1 & 0 \\ -1 & 2 & 3 \end{bmatrix}$

A. $\begin{bmatrix} -1 & -12 & 15 \end{bmatrix}$ B. $\begin{bmatrix} -9 & 8 & 15 \end{bmatrix}$ C. $\begin{bmatrix} -1 & 8 & 12 \end{bmatrix}$ D. $\begin{bmatrix} -9 & 8 & 12 \end{bmatrix}$

_____66. If f(x) = 4x – 5, what is f(f(x))?
A. 16x – 25 B. 16x – 15 C. 16x + 15 D. 16x + 25

_____67. If f(x) = 5x – 3, g(x) = 2x – 1, and h(x) = 8x – 2, what is h(f(g(x)))?
A. 80x – 66 B. 320x – 104 C. 320x + 104 D. 80x +104

_____68. If $h(x) = 2x^3$, what is h(h(h(x)))?
A. $3456x^{18}$ B. $3456x^{27}$ C. $8192x^{18}$ D. $8192x^{27}$

_____69. What is the domain of f(x) = $\dfrac{x^{10} - 8x^7 + 2}{3x - 39}$
A. **R** except $x \neq 13$ B. **R**: $x > 13$ C. **R**: $x \geq 13$ D. **R**

_____70. Which of these equations is in standard form?
A. -4x + y = 10 B. 2x + 10 = y C. 2x – y = ½ D. x + y = -5

_____71 . $\dfrac{916!}{914!}$
A. 916 B. 838,140 C. 943,823 D. 946,823

_____72. $\sum_{n=-10}^{-8} 2n - 1$
A. -55 B. -57 C. -68 D. -71

_____73. What is the distance between (2, 1) and (4, 10)?
A. 7.3 B. 8.1 C. 9.2 D. 11.2