Geometry 2nd Semester Final REVIEW , Form 1 **Test #: _____**

*****You MUST Show ALL Work On Separate Paper for CREDIT*****

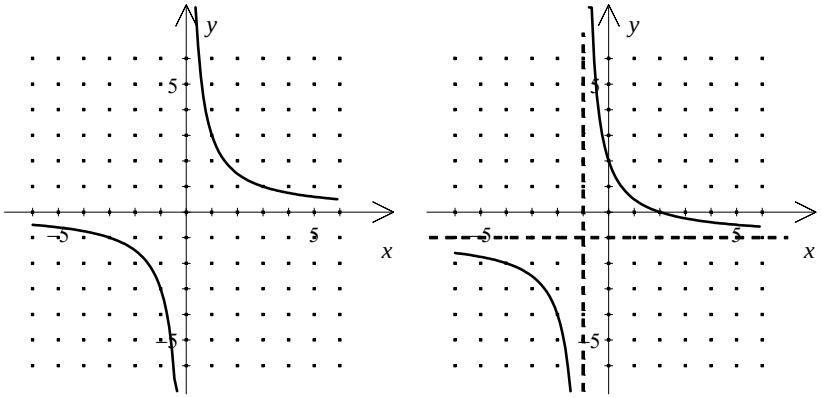
1. If $f(x) = x^2 + x + 3$, find $f(x+h) - f(x)$.

[1] _____

2. Evaluate $\frac{11!}{6!5!}$. Do not use a calculator.

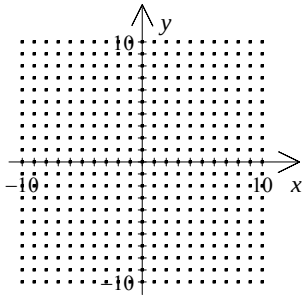
[2] _____

3. The graph of the function $f(x) = \frac{3}{x}$ is shown on the left below. The graph on the right is the same graph translated one unit left and one unit down . Write the equation of the graph on the right.



[3] _____

4. Given the function $f(x) = |x|$, write the equation of the function g whose graph is the graph of f translated 5 units to the left and 5 units down. Sketch the graph of the new function.

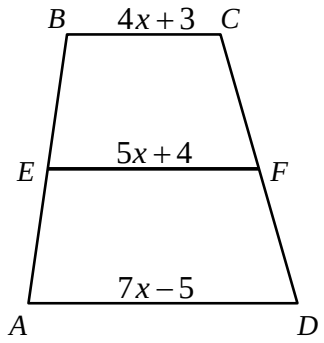


[4] _____

5. Find the inverse of the function $y = 2x + 4$.

[5] _____

6. In the figure shown, $\overline{EF}$ is the median of trapezoid *ABCD*. Find *x*.



[6] _____

7. Find the distance between (–4, 5) and (26, 21).

[7] _____

8. A plane flies 600 miles with a tail wind in 2 hours. It takes the same plane 3 hours to fly the 600 miles when flying against the wind. What is the plane's speed in still air?

[8] _____

9. Find the coordinates of the point half way between (–2, –8) and (–9, 4).

[A] $\left(-5,\ -\frac{5}{2}\right)$ [B] $\left(-\frac{11}{2},\ -2\right)$ [C] $(6,\ -13)$ [D] $\left(\frac{7}{2},\ -6\right)$

[9] _____

10. Write the quadratic equation with a lead coefficient of 1 whose roots are 6 and –7.

[10] _____

11. Barry traveled *j* miles in *k* hours and then traveled *v* miles in *e* hours. If he maintained his overall average rate, how long would it take him to travel 120 miles?

[11] _____

12. Mario watched a bug crawl through an arc of $30°$ along the rim of his melon, which was cut in half. If the radius of the melon was 9 inches, how far did the bug crawl?

[12] _____

13. Evaluate: $\sin^2\frac{7\pi}{6} + \cos^2\frac{7\pi}{4} - \tan^2\frac{\pi}{6}$

[13] _____

14. Use the midpoint formula method to find the equation of the perpendicular bisector of the line segment whose endpoints are $(4,\ -9)$ and $(2,\ -3)$. Write the equation in double-intercept form.

[14] _____

15. Solve for *x*: $\log_3(x+4) - \log_3(x-4) = \log_3 9$

[15] _____

16. Evaluate: $\cos^2(-225°) - \csc^2(330°) + \cot^2(210°)$

[16] _____

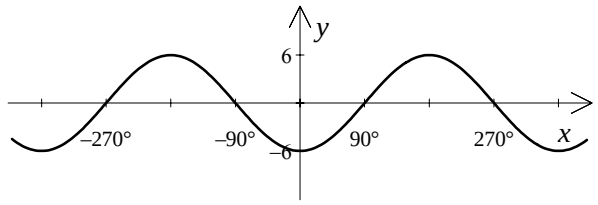
17. Find the equation in standard form of the circle with center (2, –5) and radius of 3.

[17] _____

18. Graph: $f(x) = \left(\frac{1}{3}\right)^{x+2} + 3$

[18] _____

19. Write the equation of this sinusoid.



[A] $y = 6 \sin x$ [B] $y = -6 \cos x$ [C] $y = -6 \sin x$ [D] $y = 6 \cos x$

[19] _____

20. At the smoked hams sale, Safemart sold h hams for d dollars. Good Cafe was able to buy them for $1.50 less per ham. How many hams could Good Cafe purchase with $2000?

[20] _____

21. How many three digit counting numbers less than 300 have digits that are all even?

[21] _____

22. How many ways can the letters A, B, C, D, and E be arranged in a row 4 at a time if neither A nor B can be second and E must be third? Repetition is permitted.

[22] _____

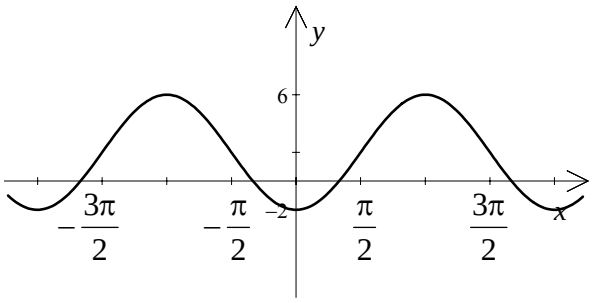
23. Write the quadratic equation with a lead coefficient of 1 whose roots are $-2 + 4i$ and $-2 - 4i$.

[23] _____

24. Factor $x^2 - 2x + 17$ over the set of complex numbers.

[24] _____

25. Write the equation of this sinusoid.



[25] _____

Evaluate:

26. Arcsin(cos 330°)

[26] _____

27. $\tan^2 \frac{5\pi}{3} + \cos^2 \frac{7\pi}{4} - \sin^2 \frac{\pi}{3}$

[27] _____

28. Find an equation of the perpendicular bisector of the segment connecting the points (–8, –6) and (–4, 5).

[28] _____

29. Write as a single logarithm: $\log_c 31 - \log_c 8$

[29] _____

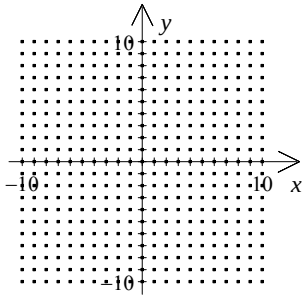
30. Find ln 773. Round your answer to four decimal places.

[30] _____

31. A wheel had an angular velocity of 430 radians per minute. How fast was the wheel rolling along in kilometers per hour if the radius of the wheel was 175 centimeters?

[31] _____

32. Complete the square to graph $y = x^2 - 4x + 3$.



[32] _____

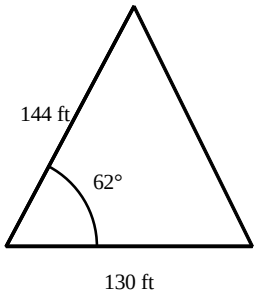
33. Cleopatra and six of her advisors sat around a circular table. How many seating arrangements were possible?

[33] _____

34. How many distinguishable permutations can be formed from the letters in the word satellite?

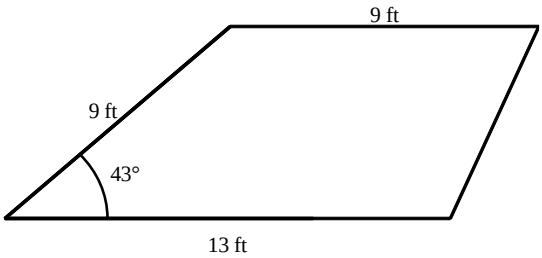
[34] _____

35. Find the area of this triangle.



[35] _____

36. Find the area of this trapezoid.

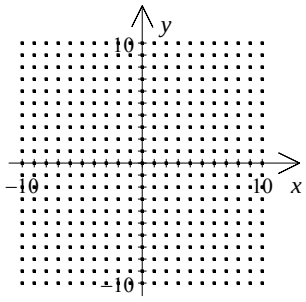


[36] _____

37. Find the area of the segment bounded by an arc of measure 80° and the chord joining the endpoints of the arc in a circle of radius 7 feet.

[37] _____

38. Graph the solution to the system of inequalities: $\begin{cases} y \geq (x-5)^2 - 4 \\ y \leq x - 7 \end{cases}$



[38] _____

39. Find the distance from the point (–5, 2) to the graph of $x + 3y + 6 = 0$.

[39] _____

40. Solve for x: $\log_6(x+3) + \log_6(x-2) = 1$

[40] _____

41. Solve $\sin^2\theta - 1 = 0$ given that $0° \leq \theta < 360°$.

[41] _____

42. Solve $2\sin\theta\cos\theta + \cos\theta = 0$ given that $0° \le \theta < 360°$.

[42] _____

43. Find the range, mean, median, mode, variance, and standard deviation for the following data:
28, 9, 25, 14, 22, 21, 27, 6, 28

[43] _____

44. The mean of a distribution that is approximately normal is 117 and the standard deviation is 9. Use the standard deviation to tell how the data are distributed with respect to the mean.

[44] _____

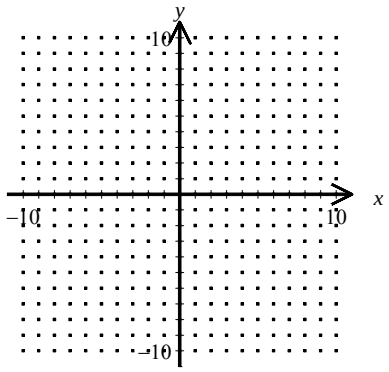
45. Solve for x: $\begin{cases} jx + hy = g \\ fx + ey = d \end{cases}$

[45] _____

46. The total cost of production varied linearly with the number of items produced. When 28 items were produced, the cost was $790. When 25 were produced, the cost was $730. Write an equation that gives the cost as a function of the number of items produced, and find out what it would cost if 100 were produced.

[46] _____

47. Find the radius and the coordinates of the center of the circle whose equation is $x^2 + y^2 + 8x - 8y + 7 = 0$. Then graph the circle.



[47] _____

48. Determine the polar form of the complex number $2 - 3i$. Express the angle θ in degrees, where $0 \le \theta < 360°$, and round numerical entries in the answer to two decimal places.

[48] _____

49. Convert 8 cis 30° to rectangular coordinates. Give an exact answer.

[49] _____

50. Multiply (–2 cis –45°)(3 cis 75°) and express the answer in rectangular coordinates. Give an exact answer.

[50] _____