

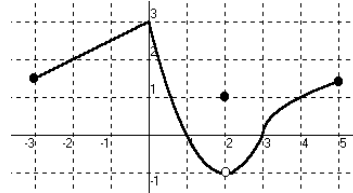
**Precalculus and Honors Precalculus
Review for Final Exam**

Name _____

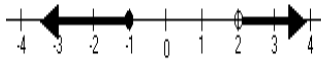
1. Find the sum of the first 20 terms of the arithmetic series with $a_1 = -2$ and $d = 8$. _____

2. What is the limit of the series $1 + \frac{2}{5} + \frac{4}{25} + \frac{8}{125} + \dots$? _____

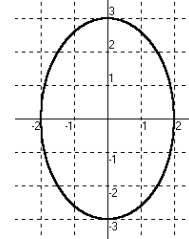
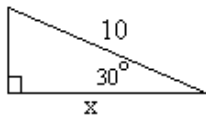
3. Given the graph of $f(x)$, what is $\lim_{x \rightarrow 2} f(x)$? _____



4. Which compound inequality is represented by the given graph: _____



5. Solve for x: _____



x = _____

6. What is the equation of the ellipse on the given graph: _____

7. Solve for x: $\log 81 = 2 \log x$ _____

x = _____

8. Write a short definition for each term:

a) Relation _____

b) Function _____

c) Range _____

d) Domain _____

9. Express $\sin 50^\circ \cos 120^\circ + \sin 120^\circ \cos 50^\circ$ as a trig function of a single angle. _____

10. Solve for x: $3x^2 - 7x = 20$ _____

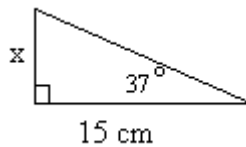
11. Write the first five terms and their sum for a sequence whose general term is $a_n = 3n - 1$ _____

12. If $f(x) = 2x + 5$ and $g(x) = 4x - 2$, then what is $f[g(x)]$? _____

13. The population of New Zealand was 3,424,000 at the end of 1993, with an annual growth rate of 1.3%. If the population continued to grow at that rate, what would you expect the population to be at the end of the year 2003? _____

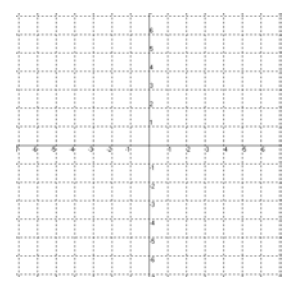
14. What is the equation of a circle with its center at $(4, -2)$ and radius = 3 ? _____

15. What is the measure of x , to the nearest tenth :



16. Write the expanded form and evaluate the expression: $\sum_{x=3}^{10} (3x - 1)$

17. What are the rectangular coordinates of the point $(2, \frac{3\pi}{4})$ in polar form?



18. Sketch the graph of the half-life function: $f(x) = (\frac{1}{2})^x$

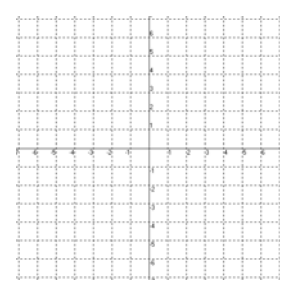
19. Write the equation of the hyperbola with its center at the origin, with vertices at $(3, 0)$ and $(-3, 0)$, and asymptotes whose slopes are $\pm \frac{2}{3}$

20. What are the roots of the function $x^3 - 4x^2 + 9x - 36$ if one of its roots is $x = 3i$?

21. Convert the angular measure $\frac{8\pi}{5}$ radians to degrees (Round off to the nearest degree)

22. What is the length of an arc of 215° on a unit circle? (Write the answer in terms of π)

23. Sketch the graph of the function $f(x) = \begin{cases} 4, & \text{if } x < 1 \\ x + 2, & \text{if } x \geq 1 \end{cases}$



24. What is the name of the shape of the graph of the polar function $r = 2 \sin \theta$?

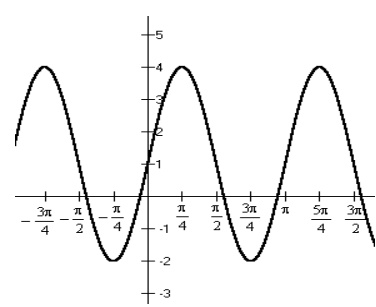
25. Solve for x and y : $\begin{bmatrix} 2 & 1 \\ 5 & 4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 1 \\ 7 \end{bmatrix}$

$x =$ _____ , $y =$ _____

26. Solve for x : $5x^{\frac{1}{4}} = 15$

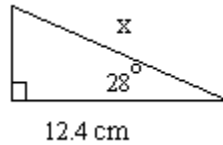
$x =$ _____

27. Write the equation of the sine function on the given graph



28. Find the value of $\cos(\arctan -\sqrt{3})$

29. Find the value of x to the nearest tenth.



30. If $P(x)$ is a polynomial function such that $P(-3) = 0$, what must be a factor of $P(x)$?

31. Find the inverse of $y = \frac{5}{8}x - 6$

32. Determine the amplitude of the graph for $y = -2 \cos 3x + 2$

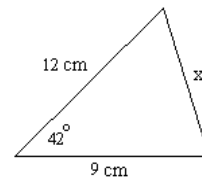
amplitude = _____

33. What is the remainder when $2x^3 + 5x^2 - 4x + 1$ is divided by $x - 2$

remainder = _____

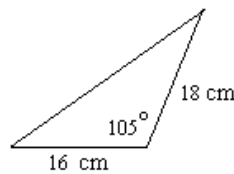
34. What are the possible rational roots of $3x^3 + x^2 - 9x + 6$?

35. Find the length of the missing side of the triangle to the nearest integer.

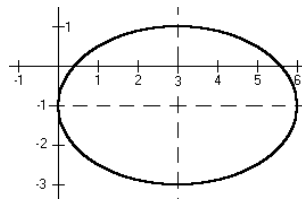


36. Determine the period of the function $y = 3 \tan 4x + 2$

37. What is the area of the obtuse triangle given?



38. Write the equation of the ellipse in the given graph.

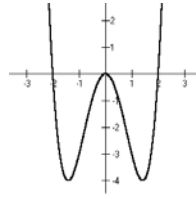


39. What is the name of the conic that is determined by the equation: $4x^2 + 8x - 5y^2 - 10 = 0$?

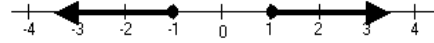
40. Solve $2 \sin \theta + \sqrt{3} = 0$ for $0^\circ \leq \theta \leq 360^\circ$

41. Write as a single logarithm: $3 \log_5 8 + \log_5 9 - \frac{1}{2} \log_5 3$

42. Classify the function given by the graph:



43. Write the absolute value equation for the given graph



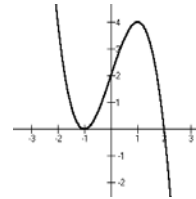
44. Evaluate the limit: $\lim_{x \rightarrow \infty} \frac{2x^2 + 5}{3x^3 - 1}$

45. Simplify the expression: $\frac{\cos \theta - \sin \theta}{\cos \theta \sin \theta}$

46. Find an exact value for the expression $\frac{1}{2} \log_2 4$

47. Write the inverse of the function $y = 2x^2 - 4$, for $x \leq 0$

48. Write the function represented by the graph in factored form



49. Complete the analysis of the rational function: $\frac{(2x - 4)}{(x + 1)(x - 3)}$

The vertical asymptotes are _____, the horizontal asymptote is _____,

there is a root at the point _____ and the y-intercept is at the point _____.

50. Solve the system of equations given as $x^2 + y^2 = 16$
 $y - 4 = -x^2$