

Name: _____

Pre-Calculus H/IB and Adv

Summer Assignment

This packet is due on the first day of school. A list of resources is included on the final page to assist you.
An answer key will be posted on your teacher's website in late August.

Evaluate without a calculator.

1. $\log_{\frac{1}{3}} 27$

2. $\log_4 \frac{1}{16}$

3. $2\ln e^4$

4. $\log(-4)$

5. $\ln \frac{1}{e}$

Simplify

6. $\log_5 25 + \log_5 5$

7. $\log_2 8^x$

Solve the exponential equation.

8. $\log_2 x = 3$

9. $\log_2 24 = \log x + \log 6$

10. $1000e^{-4x} = 75$

Solve each equation by factoring.

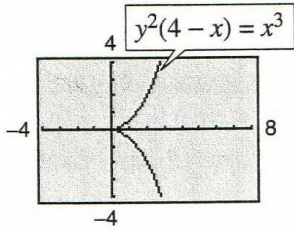
11. $10x^2 + 7x - 12 = 0$

12. $x^4 - x^2 = 12$

13. $(e^x)^2 + 7e^x + 10 = 0$

14. $(x+a)^2 - b^2 = 0$

15. Does the below graph represent y as a function of x ? Explain using at least one complete sentence.



Find the reference angle for the given angle θ .

16. $\theta = \frac{5\pi}{3}$

17. $\theta = \frac{19\pi}{6}$

18. $\theta = -\frac{5\pi}{4}$

Evaluate without the use of a calculator.

19. $\sin 270^\circ$

20. $\tan(-495)^\circ$

21. $\cos \frac{5\pi}{6}$

22. $\csc 30^\circ$

23. $\sec \frac{11\pi}{4}$

24. $\cot \pi$

25. $\cos \frac{2\pi}{3}$

26. $\sin 0^\circ$

State the quadrant in which θ lies.

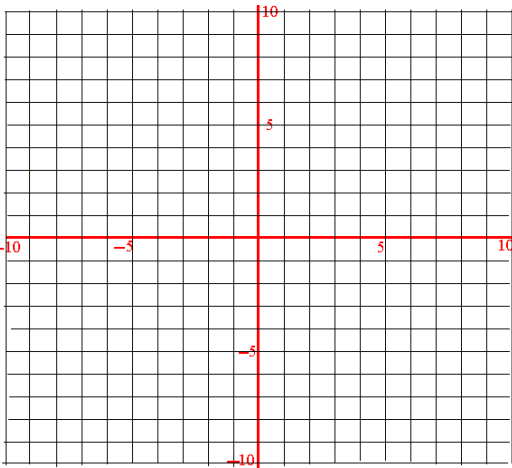
27. $\sin \theta < 0$ and $\cos \theta < 0$

28. $\sec \theta > 0$ and $\cot \theta < 0$

29. Given, $\sin \theta = \frac{2}{5}$, $\cos \theta < 0$, find $\tan \theta$.

For problems 30 - 34 , (a) identify the parent function f (e.g. $f(x) = |x|$), (b) describe the transformations that map f to g , (c) sketch the graph of g , and (d) state the domain and range in interval notation.

30. $g(x) = -(x - 5)^2 + 3$



(a) Parent Function

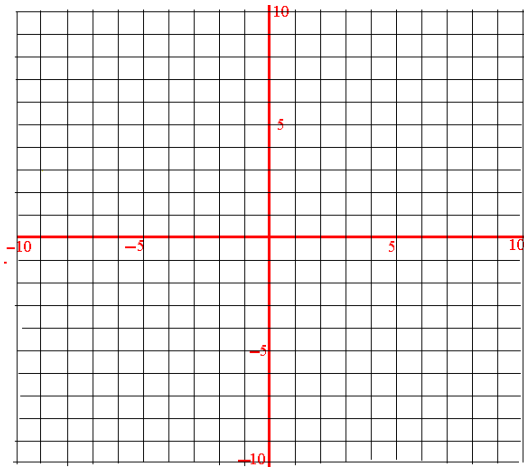
(b) Describe the transformations:

(c) Sketch (*see graph*)

(d) Domain:

Range:

31. $g(x) = \sqrt{-x - 7}$



(a) Parent Function

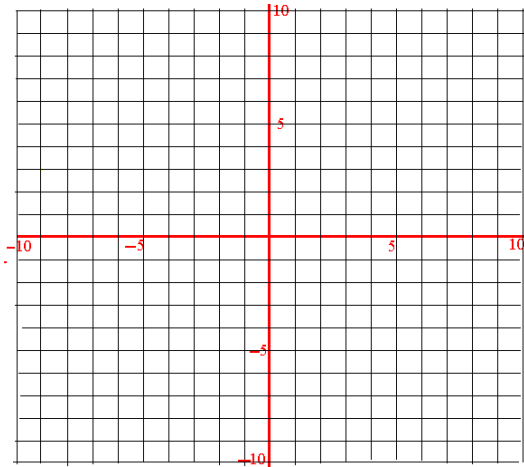
(b) Describe the transformations::

(c) Sketch (*see graph*)

(d) Domain:

Range:

32. $g(x) = 4|x + 2| - 3$



(a) Parent Function

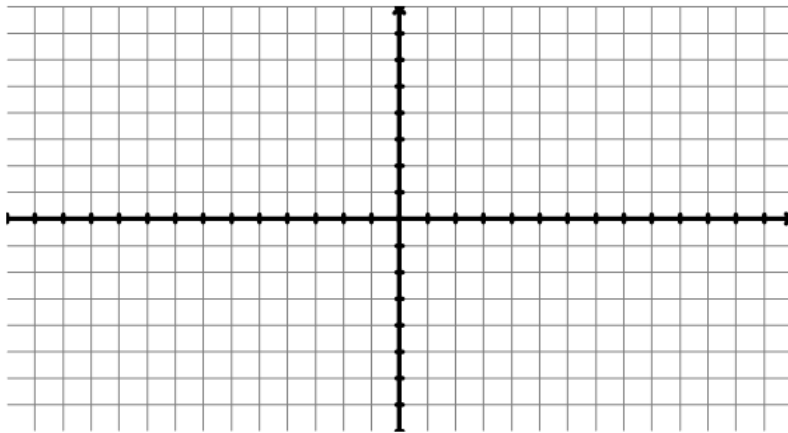
(b) Describe the transformations:

(c) Sketch (*see graph*)

(d) Domain:

Range:

33. Error



(a) Parent Function

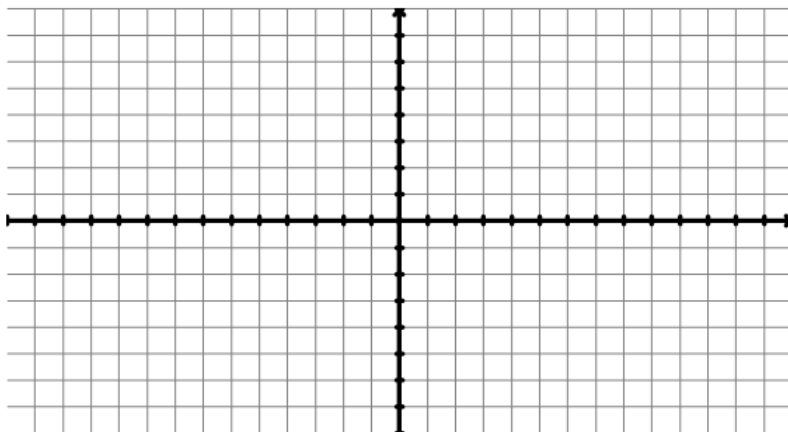
(b) Describe the transformations:

(c) Sketch (*see graph ~ label both axes with an appropriate scale*)

(d) Domain:

Range:

34. $g(x) = -3\cos(2x) - 1$



(a) Parent Function

(b) Describe the transformations:

(c) Sketch (*see graph ~ label both axes with an appropriate scale*)

(d) Domain:

Range:

Simplify the expression. Write your answer to number 35 in the form $a + bi$.

35. $\frac{1-i}{4-5i}$

36. $\frac{5}{2+\sqrt{x}}$

Evaluate the function at each specifies value of the independent variable, and simplify. $f(x) = -x^2 + 1$

37. $f(-1)$

38. $f(x + h)$

39. Find the value(s) of x when $f(x) = -23$

Helpful Resources:

[Evaluating Logs Without a Calculator ~ Basic Problems](#)

[Evaluating Logs Without a Calculator ~ More Advanced Problems](#)

[Condensing Logarithmic Expressions](#)

[Expanding Logarithmic Expressions](#)

[Solving Logarithmic Equations](#)

[Solving Exponential Equations](#)

[Factoring Quadratic-Like Polynomials](#)

[Finding Reference Angles in Degrees](#)

[Finding Reference Angles in Radians](#)

[Trig Functions of Any Angle](#)

[Summary of Function Transformations](#)