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For 10 through 12, write the transformations of the function compared to the parent function $f(x) = 2^x$

10. $g(x) = -2^x + 4$

11. $h(x) = 3 \cdot 2^{x-1}$

12. $r(x) = 2^{x+4} - 9$

For 13 through 15, write the transformations of the function compared to the parent function $f(x) = \log x$

13. $g(x) = -\log(x + 12)$

14. $h(x) = 5\log(x) - 2$

15. $r(x) = \log(x - 4) + 1$

Convert each log to an exponential.

16. $\log_2 x = 4$

17. $\log 3 = a$

18. $\log_5(x - 1) = 3$

Convert each exponential expression to a logarithm.

19. $2^x = 5$

20. $e^{2x} = 3$

21. $10^y = 12$

Condense each expression to a single log.

22. $\log a - \log b$

23. $3\log x + 4\log y$

24. $2\log x + \log y - 3\log z$

Expand each log.

25. $\log(2x)$

26. $\log\left(\frac{2y}{5}\right)$

27. $\log\left(\frac{3y^4}{x^5}\right)$

Solve the following equations:

28. $6^{2x} - 5 = 45$

29. $2^{3x-1} = 32$

30. $\log(2x - 1) = \log(8x + 14)$

31. $\log_2(3x + 1) = 3$

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Unit 5

1. Simplify $\frac{x^2-7x-30}{x^2-5x-24}$

2. Simplify $\frac{x^2+8x+12}{x^2+3x-18}$

3. Simplify $\frac{2x^2+10x-48}{8x+64}$

4. Simplify $\frac{x^2+3x-28}{x^2-49}$

5. Simplify each expression

a) $\frac{3}{x+7}+\frac{4}{x-8}$

b) $\frac{7x}{x+1}+\frac{8}{x-7}$

c) $\frac{6}{x-1}-\frac{5x}{4}$

6. Solve the equation. $\frac{4}{x-2}+\frac{1}{4x}=\frac{6}{x}$

7. Solve the equation. $\frac{x+5}{x+8}=1+\frac{6}{x+1}$

8. Solve the equation. $\frac{x-3}{x-1}-\frac{2}{x+1}=\frac{x-5}{x^2-1}$

9. Solve the equation. $\frac{3}{x+1}+\frac{2}{x-4}=\frac{4x-11}{x^2-3x-4}$

10 Identify any horizontal or vertical asymptotes or holes in the graph.

a) $f(x)=\frac{x-2}{x-4}$

Vertical Asymptote:_____

Horizontal Asymptote: _____

Hole(s): _____

b) $f(x)=\frac{2x+4}{x^2-4}$

Vertical Asymptote:_____

Horizontal Asymptote: _____

Hole(s): _____

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12. Solve $\sqrt[3]{3x+4}-1=26$

13. Solve $\sqrt[3]{2x-7}-2=3$

14. State the vertical asymptote(s), hole(s), and horizontal asymptote for the following function: $\frac{3x^2-12x}{x^2-2x-3}$

15. Find the solution for the equation: $x=\sqrt{110-x}$. Be sure to clearly state any solution(s) and/or extraneous solution(s).

16. Solve: $4-\sqrt[3]{x+1}=5$

17. What are the asymptotes for $\frac{-x^2+16x-63}{x^2-2x-35}$?

18. Simplify $\frac{x^2-2x-15}{x^2-6x+5}$

19. Find the product of $\frac{8x-56}{8x+48}\cdot\frac{x^2+9x+18}{8x^2+24x}$

Unit 6

1. Convert the following from radians to degrees.
   a. $\frac{3\pi}{4}$ radians b. 6π radians c. $\frac{11\pi}{6}$ radians

2. Convert the following from degrees to radians.
   a. 60^0 b. 360^0 c. 720^0

3. Circle all of the angle measures that are coterminal with 380^0
   a. 680^0 b. 20^0 c. $\frac{\pi}{9}$
   d. -360^0 e. -700^0 f. 6π

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4. Find the values of all six trigonometric functions of θ when $\theta = 315^0$.

   $\sin\theta =$ _____ $\csc\theta =$ _____

   $\cos\theta =$ _____ $\sec\theta =$ _____

   $\tan\theta =$ _____ $\cot\theta =$ _____

5. Find the values of all six trigonometric functions of θ when $\theta = \frac{3\pi}{2}$.

   $\sin\theta =$ _____ $\csc\theta =$ _____

   $\cos\theta =$ _____ $\sec\theta =$ _____

   $\tan\theta =$ _____ $\cot\theta =$ _____

6. If $cot\theta = \frac{5}{12}$ and θ is in the second quadrant, use the trigonometric identities to find the value of $sin\theta$.