Algebra 2: 8.1, 8.2,7.2-7.5 Test Review

Simplify each and state the excluded values.

1) $\dfrac{m-7}{8m^2-56m}$

2) $\dfrac{m^2+m-12}{m^2-m-6}$

Simplify each expression. Leave all answers in simplest factored form.

3) $\dfrac{x^2-5x+4}{3-3x}\cdot\dfrac{2x^2+12x}{2x^2-8x}$

4) $\dfrac{10r^3+10r^2}{r+1}\cdot\dfrac{3r^2-27r}{10r^3-90r^2}$

5) $\dfrac{n^2-13n+40}{7n-35}\div\dfrac{n^2-16n+64}{n^2-64}$

6) $-\dfrac{4ab}{21c}\div\dfrac{22a^2}{14c^2}$

7) $\dfrac{\dfrac{3-v}{v-8}}{\dfrac{v-3}{v^2-16v+64}}$

8) $\dfrac{\dfrac{3}{x+1}}{\dfrac{5}{x-1}}$

9) $\dfrac{5}{3y}+\dfrac{6}{2xy^2}$

10) $\dfrac{2}{x-5}-\dfrac{6}{x+6}$

11) $\dfrac{8}{m^2-25}+\dfrac{9}{m-5}$

12) $\dfrac{2+\dfrac{1}{x}}{5-\dfrac{1}{x}}$

For questions 13-14, write your answers as sentences.

13. You would like to take a special trip in a few years, and you need to save money. You deposit $325 in an account that pays 6% interest compounded quarterly. How much money will you have after 9 years?

14. A family would like to place $5000 in an account for 15 years to save for their child's college education. The family has two options. They can invest in an account which pays 4% interest compounded monthly or an account which pays 3.5% compounded daily. Which is the best option and how much more money would the family earn in total by choosing the best option?

Evaluate the logarithm.

15. $\log_6 36$ 16. $\log_3 1$ 17. $\log_4 32$

18. Rewrite $\log_9 81 = 2$ as an exponential equation. 19. Rewrite $7^3 = 343$ in log form.

Expand each expression.

20. $\log_4 15y^5$ 21. $\log_6 \frac{7}{y^3}$ 22. $\log_5 9y^3\sqrt{x}$

Condense each expression.

23. $\log_6 12 - \log_6 y$ 24. $3\log_7 4x + \log_7 3y$ 25. $\frac{1}{2}\log x - 2\log z + \log y$

Solve.

26. $81^{-n-3} < 3^{2n+5}$ 27. $16^{-x} = (\frac{1}{64})^{x+1}$ 28. $36^{5-2x} > \frac{1}{216}$

29. $\log_3 (y-10) = 5$ 30. $\log_8 (2x+4) = \log_8 (x^2-11)$ 31. $\log_3 (5x + 1) = \log_3 (3x + 7)$

32. $\log_{16} x = \frac{5}{4}$ 33. $\log_x 27 = \frac{3}{2}$ 34. $\log_6 x = 7$

35. $\log_2 32 = x + 3$ 36. $\log_5 (x - 3) - \log_5 8 = 2$ 37. $\log_3 x + \log_3 3x = 5$

For 38-41, choose the correct answer.

38. A formula used to compute the current value of a savings account is $A = P(1 + r)^n$, where A is the current value; P is the amount deposited; r is the rate of interest for 1 compounding period, expressed as a decimal; and n is the number of compounding periods. Which of the following is closest to the value of a savings account after 5 years if $10,000 is deposited at 4% annual interest compounded yearly?

F. $10,400
G. $12,167
H. $42,000
J. $52,000
K. $53,782

39. What is the value of $\log_2 8$?

A. 3
B. 4
C. 6
D. 10
E. 16

40. If $3^x = 54$, then which of the following must be true?

A. $1 < x < 2$
B. $2 < x < 3$
C. $3 < x < 4$
D. $4 < x < 5$
E. $5 < x$

41. What is the real value of x in the equation $\log_2 24 - \log_2 3 = \log_5 x$?

F. 3
G. 21
H. 72
J. 125
K. 243