Algebra 2 Semester 2 Name_____

Study Guide

Write each expression in radical form.

1) $(10n)^{\frac{3}{4}}$

Write each expression in exponential form.

2) $\left(\sqrt[3]{4n}\right)^4$

Simplify. Your answer should contain only positive exponents with no fractional exponents in the denominator.

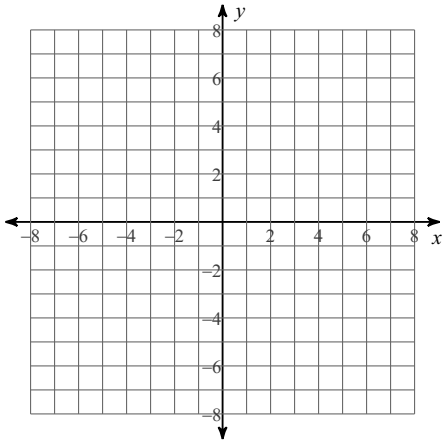
3) $\dfrac{u^2v^{\frac{5}{3}}}{u^2v^{\frac{2}{3}} \cdot 2v^2}$

Simplify.

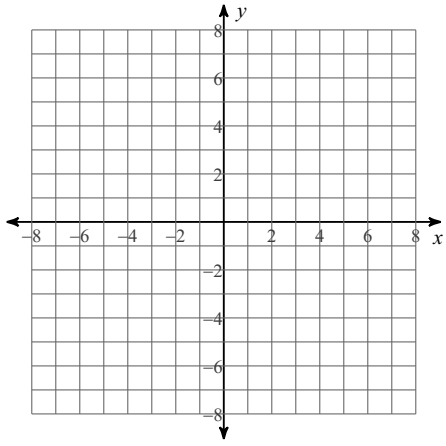
4) $-3\sqrt[4]{6} - \sqrt[4]{6}$

Sketch the graph of each function.

5) $y = \sqrt{x+4} - 5$



6) $y = \sqrt[3]{x-3}$



Identify the domain and range of each.

7) $y = \frac{1}{2}\sqrt{x-1} - 3$

8) $y = \frac{2}{5}\sqrt[3]{x+6} + 3$

Solve each equation. Remember to check for extraneous solutions.

9) $-10 + \sqrt{50n - 1} = -3$

10) $\sqrt{90 - x} = x$

Perform the indicated operation.

11) $f(t) = 2t + 2$
$g(t) = t^3 + 4t^2$
Find $f(g(t))$

12) $g(x) = 3x + 4$
$f(x) = -2x - 4$
Find $g(f(x))$

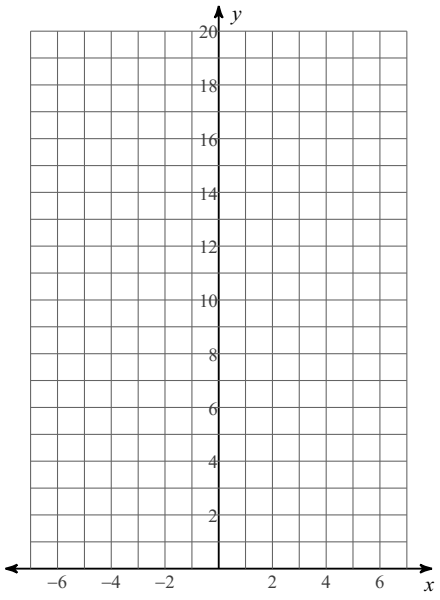
Find the inverse of each function.

13) $f(x) = (x+2)^3 + 1$

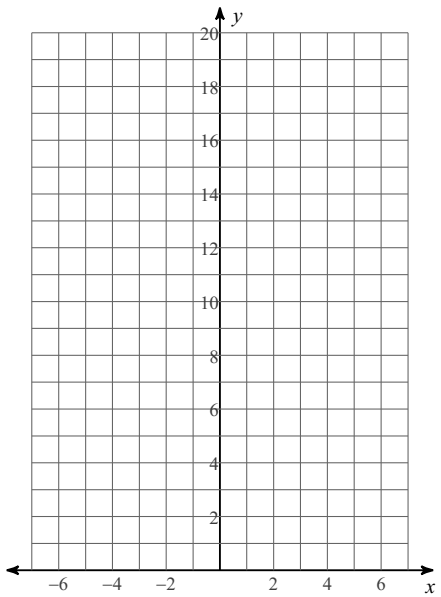
14) $f(x) = \sqrt[5]{x-2} - 1$

Sketch the graph of each function.

15) $y = 5 \cdot 2^x$



16) $y = 3 \cdot \left(\frac{1}{2}\right)^x$



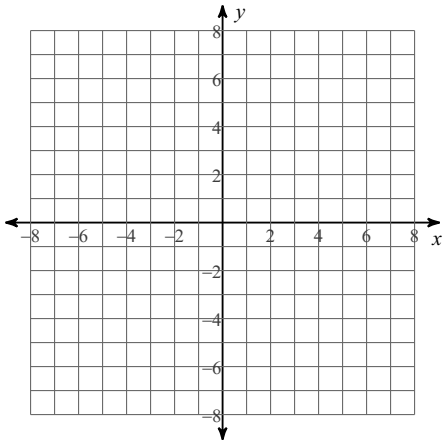
Solve each equation. Round your answers to the nearest ten-thousandth if necessary.

17) $16^{p+2} + 4 = 85$

18) $5^{2a-3} = 5^4$

Sketch the graph of each function.

19) $f(x) = \ln(x - 1) + 4$



Rewrite each equation in exponential form.

20) $\log_6 216 = 3$

Rewrite each equation in logarithmic form.

21) $18^y = x$

Condense each expression to a single logarithm.

22) $4\log_7 a - 16\log_7 b$

Expand each logarithm.

23) $\log_3 (x \cdot y \cdot z^2)$

Solve each equation.

24) $\log_{15}(-5x - 3) = \log_{15}(3x + 5)$

25) $1 + \log_4 (k - 4) = -1$

26) $\log_4 2 + \log_4 (x - 1) = 3$

Identify the vertical asymptotes and horizontal asymptote of each.

27) $f(x) = \dfrac{3}{x-2} + 1$

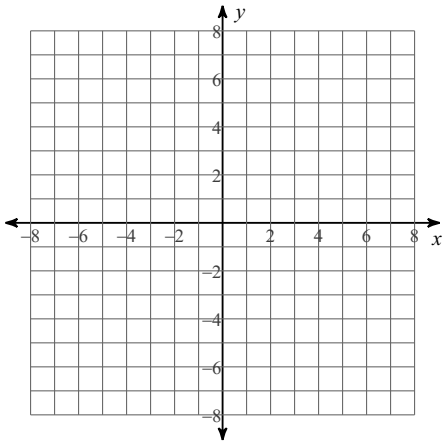
28) $f(x) = \dfrac{x-1}{-3x-12}$

Identify the domain and range of each.

29) $f(x) = \dfrac{1}{x+3} - 2$

Graph each function.

30) $f(x) = \dfrac{3}{x-1} + 2$



Simplify.

31) $\dfrac{v^2 - 6v + 5}{v - 1}$

Simplify each expression.

32) $\dfrac{7x}{6x} \cdot \dfrac{42x^2 - 24x}{35x - 20}$

33) $\dfrac{r-5}{r^2-25} \div \dfrac{8r}{4r^3 + 20r^2}$

34) $\frac{a+6b}{3b^3}+\frac{6a}{2}$

35) $\frac{2}{3v}+\frac{3v}{5u}$

Solve each equation. Remember to check for extraneous solutions.

36) $\frac{1}{6x}-\frac{1}{2x^2}=\frac{x+3}{3x^2}$

37) $\frac{3}{2}=\frac{1}{2p-10}+\frac{3p-6}{p-5}$

Find the common difference and the explicit formula.

38) $-5,\ -2,\ 1,\ 4,\ ...$

Find the common ratio and the explicit formula.

39) $-4,\ -12,\ -36,\ -108,\ ...$

Evaluate each arithmetic series described.

40) $\sum_{k=1}^{35}(6k+2)$

Evaluate each geometric series described.

41) $\sum_{m=1}^{9}2\cdot 3^{m-1}$

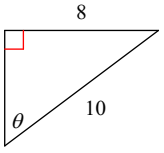
Evaluate each infinite geometric series described.

42) $\sum_{m=1}^{\infty}10\cdot 0.9^{m-1}$

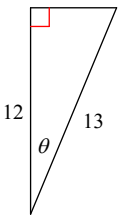
43) $\sum_{m=1}^{\infty}4\cdot 2^{m-1}$

Find the value of the trig function indicated.

44) $\cos\theta$



45) $\tan\theta$

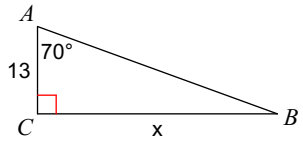


In each triangle ABC, angle C is a right angle. Find the value of the trig function indicated.

46) Find $\sin A$ if $c = 20,\ b = 12,\ a = 16$

Find the measure of each side indicated. Round to the nearest tenth.

47)



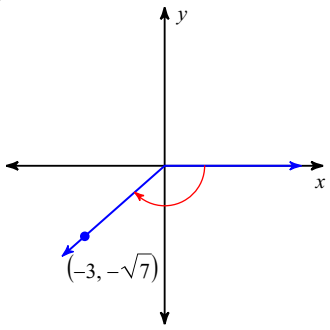
Given degrees, convert to radians. Given radians, convert to degrees.

48) -300°

49) $-\frac{5\pi}{18}$

Use the given point on the terminal side of angle θ to find the value of the trigonometric function indicated.

50) $\sin \theta$



Answers to Study Guide

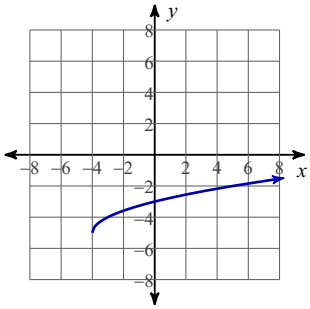
1) $\left(\sqrt[4]{10n}\right)^3$

2) $(4n)^{\frac{4}{3}}$

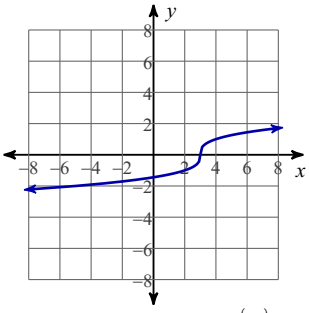
3) $\frac{1}{2v}$

4) $-4\sqrt[4]{6}$

5)



6)



7) Domain: $x \geq 1$
Range: $y \geq -3$

8) Domain: { All real numbers. }
Range: { All real numbers. }

9) $\{1\}$

10) $\{9\}$

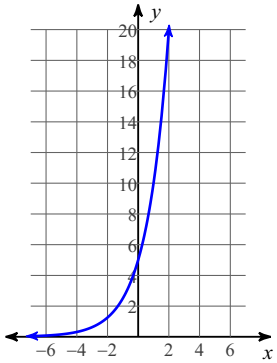
11) $2t^3 + 8t^2 + 2$

12) $-6x - 8$

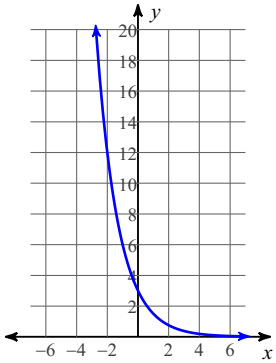
13) $f^{-1}(x) = \sqrt[3]{x-1} - 2$

14) $f^{-1}(x) = 2 + (x+1)^5$

15)



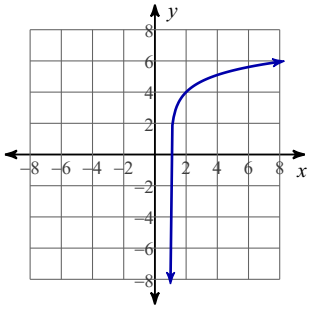
16)



17) -0.415

18) $\{\frac{7}{2}\}$

19)



20) $6^3 = 216$

21) $\log_{18} x = y$

22) $\log_7 \frac{a^4}{b^{16}}$

23) $\log_3 x + \log_3 y + 2\log_3 z$

24) $\{-1\}$

25) $\left\{\frac{65}{16}\right\}$

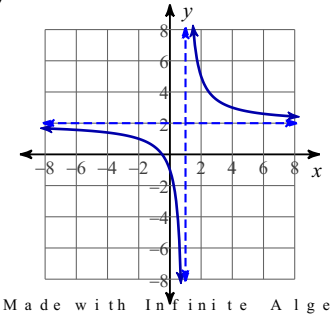
26) $\{33\}$

27) Vertical Asym.: $x = 2$
Horz. Asym.: $y = 1$

28) Vertical Asym.: $x = -4$
Horz. Asym.: $y = -\frac{1}{3}$

29) Domain: All reals except -3
Range: All reals except -2

30)



31) $v - 5$; $\{1\}$

32) $\frac{7x}{5}$

33) $\frac{r}{2}$

34) $\frac{9ab^3 + a + 6b}{3b^3}$

35) $\frac{10u + 9v^2}{15vu}$

36) $\{-9\}$

37) $\left\{-\frac{4}{3}\right\}$

38) Common Difference: $d = 3$
Explicit: $a_n = -8 + 3n$

39) Common Ratio: $r = 3$
Explicit: $a_n = -4 \cdot 3^{n-1}$

40) 3850

41) 19682

42) 100

43) No sum

44) $\frac{3}{5}$

45) $\frac{5}{12}$

46) $\frac{4}{5}$

47) 35.7

48) $-\frac{5\pi}{3}$

49) -50°

50) $-\frac{\sqrt{7}}{4}$