Algebra 2 Name key

Chapter 5 Review (Radicals)

Simplify.

1) $\sqrt{147x^2y^4}$ $= 7xy^2\sqrt{3}$

y^2x 3 49 (7 7)

2) $\sqrt{294u^3v^3}$ $7uv\sqrt{6uv}$

3 98, 2 49, (7 7)

3) $\sqrt[3]{384x^3y^8z}$ $= 4xy^2\sqrt[3]{6y^2z}$

3 128, 2 64, 8 8, (2 2 2), 2 4, 2 2

4) $\sqrt[3]{189pq^4r^5}$ $3qr^3\sqrt{7pqp^2}$ $3qr\sqrt[3]{7pqp^2}$

7 27, 9 3, 3 3

5) $\sqrt[3]{375x^4y^2z^4}$ $5xz\sqrt[3]{3xy^2z}$

3 125, 5 25, 5 5

6) $\sqrt[5]{96x^6y^4z^6}$ $2xz\sqrt[5]{3xy^4z}$

3 32, 4 8, 2 2, 4 2, 2 2

Write each expression with rational exponets.

7) $\sqrt[5]{2n^3}$ $(2n)^{3/5}$

8) $(\sqrt[3]{6v})^4$ $(6v)^{\frac{4}{3}}$

Write in Radical form. Simplify if possible.

9) $(27n^6)^{\frac{5}{3}}$ $(\sqrt[3]{27n^6})^5$

3 9, 3 3, nnn, nnn

$(3n^2)^5 = 3^5n^{10} = 243n^{10}$

10) $(64x^2)^{\frac{3}{2}}$ $(\sqrt{64x^2})^3$

$(8x)^3$

$8^3x^3 = 512x^3$

Describe the transformation. State the Domain and Range.

11) $y = 2\sqrt{x-1} - 2$ (1, -2)

Stretch
right 1
down 2

D: $x \geq 1$
R: $y \geq -2$

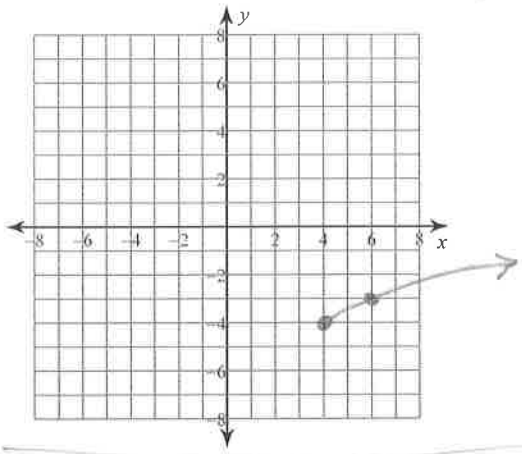
12) $y = 2\sqrt{x+6} - 1$ (-6, -1)

Stretch
left 6
down 1

D: $x \geq -6$
R: $y \geq -1$

Describe the transformation. Sketch a graph and state the Domain and Range.

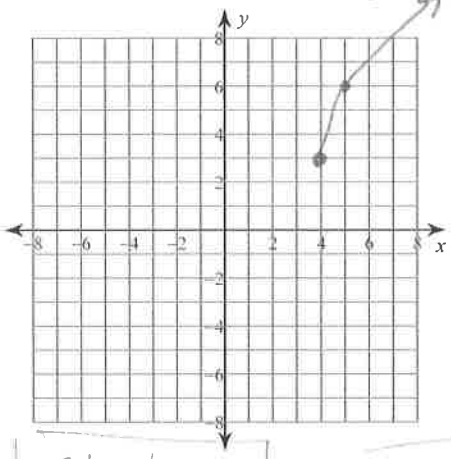
13) $y = \frac{1}{2}\sqrt{x-4} - 4$ (4, -4)



compression
right 4
down 4

D: $x \geq 4$
R: $y \geq -4$

14) $y = 3\sqrt{x-4} - 3$ (4, -3)



stretch
right 4
down 3

D: $x \geq 4$
R: $y \geq -3$

Solve each equation. Remember to check for extraneous solutions.

15) $5 = -5 + \sqrt{2 - 49x}$
$+5 \quad +5$

$10 = \sqrt{2-49x}$

$(10)^2 = (\sqrt{2-49x})^2$

$100 = 2 - 49x$
$-2 \quad -2$

$98 = -49x$
$-49 \quad -49$

$x = -2$

check
$5 = -5 + \sqrt{100}$
$5 = -5 + 10$
$5 = 5$ ✓

16) $\sqrt{12+4a} = a$

$(\sqrt{12+4a})^2 = (a)^2$

$12 + 4a = a^2$
$-12 \quad -4a \quad -12 - 4a$

$0 = a^2 - 4a - 12$

$0 = (a-6)(a+2)$

$a = 6$ $\quad a = -2$ extraneous

check
$\sqrt{12+4(6)} = 6$
$\sqrt{36} = 6$ ✓
$\sqrt{12+4(-2)} = -2$
$\sqrt{12-8} = -2$
$\sqrt{4} = -2$
$2 = -2$

17) $\sqrt{3p-23} = \sqrt{9-p}$

$3p - 23 = 9 - p$

$+p \quad +23 \quad +23 + p$

$4p = 32$

$p = 8$

check: $\sqrt{3(8)-23} = \sqrt{9-8}$

$\sqrt{1} = \sqrt{1}$ ✓

18) $\sqrt{6v} = v$

$6v = v^2$

$-6v \quad -6v$

$0 = v^2 - 6v$

v

$0 = v(v-6)$

$v = 0$

$v - 6 = 0$

$+6 \quad +6$

$v = 6$

check: $\sqrt{0} = 0$ ✓

$\sqrt{6(6)} = 6$

$6 = 6$ ✓

19) $-9 = \sqrt{33 - 4x} - x$

$+x \quad +x$

$x - 9 = \sqrt{33 - 4x}$

$(x-9)(x-9) = 33 - 4x$

$x^2 - 9x - 9x + 81 = 33 - 4x$

$+4x - 33 \quad -33 + 4x$

$x^2 - 14x + 48 = 0$

$(x-6)(x-8) = 0$

$x = 8$ extra

$x = 6$ extra

check: $-9 = \sqrt{33 - 4(6)} - 6$

$\sqrt{9} - 6$

$3 - 6$

$-9 \neq -3$ (NO soln)

$-9 = \sqrt{33 - 4(8)} - 8$

$-9 = 1 - 8$

$-9 \neq -7$

20) $m = \sqrt{4m+8} - 3$

$+3 \quad +3$

$(m+3) = (\sqrt{4m+8})^2$

$(m+3)(m+3) = 4m + 8$

$m^2 + 6m + 9 = 4m + 8$

$-4m - 8 \quad -4m - 8$

$m^2 + 2m + 1 = 0$

$(m+1)(m+1) = 0$

$m = -1$

check: $-1 = \sqrt{4(-1)+8} - 3$

$-1 = \sqrt{4} - 3$

$-1 = 2 - 3$

$-1 = -1$ ✓

Solve. Remember to check your solutions.

21) $5 - 3n^{\frac{5}{4}} = -724$

$-5 \quad -5$

$-3n^{5/4} = -729$

$\frac{-3n^{5/4}}{-3} = \frac{-729}{-3}$

$\left[n^{5/4}\right]^{4/5} = [243]^{4/5}$

$n = 81$

check: $5 - 3(81)^{5/4} = -724$

$5 - 729 = -724$

$-724 = -724$ ✓

22) $\left[(a-18)^{\frac{3}{2}}\right]^{2/3} = [729]^{2/3}$

$a - 18 = 81$

$+18 \quad +18$

$a = 99$

check: $(99-18)^{\frac{3}{2}} = 729$

$729 = 729$ ✓

23) $\left[243\right]^{3/5} = \left[(-5-4k)^{\frac{5}{3}}\right]^{3/5}$

$27 = -5 - 4k$

$+5 \quad +5$

$32 = -4k$

$-8 = k$

check: $243 = (-5-4(-8))^{\frac{5}{3}}$

$(-5+32)^{5/3}$

$243 = (27)^{5/3}$

$243 = 243$ ✓

24) $2\sqrt{x-4} - 11 \leq 7$

$+11 \quad +11$

$2\sqrt{x-4} \leq 18$

$\frac{2\sqrt{x-4}}{2} \leq \frac{18}{2}$

$(\sqrt{x-4})^2 \leq (9)^2$

$x - 4 \leq 81$

$+4 \quad +4$

$x \leq 85$

$x - 4 \geq 0$

$x \geq 4$

$4 \leq x \leq 85$

25) $7\sqrt{x-4} - 5 > 16$

$+5 \quad +5$

$\frac{7\sqrt{x-4}}{7} > \frac{21}{7}$

$(\sqrt{x-4})^2 > (3)^2$

$x - 4 > 9$

$x > 13$

$x - 4 \geq 0$

$x \geq 4$

$x > 13$