

Name: _____

Key

Hour: _____

Date: _____

Solving Radical Equations Practice

Solve each equation. CHECK FOR EXTRANEIOUS SOLUTIONS... it's the law.

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

$$x = 10^2$$

$$\boxed{x = 100}$$

Check

$$\sqrt{100} = 10$$

$$10 = 10 \checkmark$$

$$(\sqrt{n+9})^2 = (1)^2$$

$$n+9=1$$

$$\begin{array}{r} -9 \\ -9 \end{array}$$

$$\boxed{n = -8}$$

Check

$$\sqrt{-8+9} = 1$$

$$\sqrt{1} = 1$$

$$1 = 1 \checkmark$$

$$(\sqrt{3n})^2 = (\sqrt{4n-1})^2$$

$$3n = 4n - 1$$

$$\begin{array}{r} -4n \\ -4n \end{array}$$

$$-n = -1$$

$$\begin{array}{r} -1 \\ -1 \end{array}$$

$$\boxed{n = 1}$$

Check

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

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

$$\sqrt{3} = \sqrt{3} \checkmark$$

$$6 = (\sqrt{v-2})^2$$

$$36 = v - 2$$

$$\begin{array}{r} +2 \\ +2 \end{array}$$

$$\boxed{38 = v}$$

Check

$$6 = \sqrt{38-2}$$

$$6 = \sqrt{36}$$

$$6 = 6 \checkmark$$

$$\frac{10\sqrt{9x}}{10} = \frac{60}{10}$$

$$(\sqrt{9x})^2 = (6)^2$$

$$9x = 36$$

$$\begin{array}{r} 9 \\ 9 \end{array}$$

$$\boxed{x = 4}$$

Check

$$10\sqrt{9(4)} = 60$$

$$10\sqrt{36} = 60$$

$$10(6) = 60$$

$$60 = 60 \checkmark$$

$$(\sqrt{3n+12})^2 = (\sqrt{n+8})^2$$

$$3n+12 = n+8$$

$$\begin{array}{r} -n \\ -n \end{array}$$

$$2n+12 = 8$$

$$\begin{array}{r} -12 \\ -12 \end{array}$$

$$2n = -4$$

$$\begin{array}{r} 2 \\ 2 \end{array}$$

$$\boxed{n = -2}$$

$$(\sqrt{v-4})^2 = (3)^2$$

$$v-4 = 9$$

$$\begin{array}{r} +4 \\ +4 \end{array}$$

$$\boxed{v = 13}$$

Check

$$\sqrt{13-4} = 3$$

$$\sqrt{9} = 3$$

$$3 = 3 \checkmark$$

$$\frac{-8 + \sqrt{5a-5}}{+8} = \frac{-3}{+8}$$

$$(\sqrt{5a-5})^2 = (5)^2$$

$$5a-5 = 25$$

$$\begin{array}{r} +5 \\ +5 \end{array}$$

$$5a = 30$$

$$\begin{array}{r} 5 \\ 5 \end{array}$$

$$\boxed{a = 6}$$

Check

$$-8 + \sqrt{5(6)-5} = -3$$

$$-8 + \sqrt{30-5} = -3$$

$$-8 + \sqrt{25} = -3$$

$$-8 + 5 = -3$$

$$-3 = -3 \checkmark$$

Check

$$\sqrt{3(-2)+12} = \sqrt{-2+8}$$

$$\sqrt{-6+12} = \sqrt{6}$$

$$\sqrt{6} = \sqrt{6} \checkmark$$

$$\begin{aligned}
 (\sqrt{2k+40})^2 &= (\sqrt{-16-2k})^2 \\
 2k+40 &= -16-2k \\
 +2k & \quad +2k \\
 \hline
 4k+40 &= -16 \\
 -40 & \quad -40 \\
 \hline
 4k &= -56 \\
 \frac{4k}{4} &= \frac{-56}{4} \\
 \boxed{k} &= \boxed{-14}
 \end{aligned}$$

Check

$$\begin{aligned}
 \sqrt{2(-14)+40} &= \sqrt{-16-2(-14)} \\
 \sqrt{-28+40} &= \sqrt{-16+28} \\
 \sqrt{12} &= \sqrt{12} \checkmark
 \end{aligned}$$

$$\begin{aligned}
 (\sqrt{11-x})^2 &= (\sqrt{x-7})^2 \\
 11-x &= x-7 \\
 +x & \quad +x \\
 \hline
 11 &= 2x-7 \\
 +7 & \quad +7 \\
 \hline
 18 &= 2x \\
 \frac{18}{2} &= \frac{2x}{2} \\
 \boxed{9} &= \boxed{x}
 \end{aligned}$$

$$\begin{aligned}
 \sqrt{11-9} &= \sqrt{9-7} \\
 \sqrt{2} &= \sqrt{2} \checkmark
 \end{aligned}$$

Simplify each expression using the properties of exponents.

$$\frac{(2pm^{-1}q^0)^{-4} \cdot 2m^{-1}p^3}{2pq^2}$$

$$\begin{aligned}
 \frac{(2hj^2k^{-2} \cdot h^4j^{-1}k^4)^0}{2h^{-3}j^{-4}k^{-2}} &= \frac{1}{2h^{-3}j^{-4}k^{-2}} \\
 &= \boxed{\frac{h^3 \cdot 4k^2}{2}}
 \end{aligned}$$

$$\begin{aligned}
 \frac{2^{-4}p^{-4}m^4q^0 \cdot 2m^{-1}p^3}{2pq^2} &= \frac{m^4q^02p^3}{2pq^22^4p^4m} \\
 &= \frac{2m^4p^3}{2^5p^5mq^2} = \frac{2^{-4}m^3p^{-2}}{q^2} = \boxed{\frac{m^3}{16p^2q^2}}
 \end{aligned}$$

Convert between rational exponent and radical forms.

$$6^{\frac{1}{3}} = \boxed{\sqrt[3]{6}}$$

$$11^{\frac{5}{3}} = \boxed{\sqrt[3]{11^5}}$$

$$\sqrt[3]{x^2} = \boxed{x^{2/3}}$$

$$\sqrt{t} = \boxed{t^{1/2}}$$

Simplify using the properties of rational exponents.

$$(a^8)^{\frac{3}{2}} = a^{\frac{24}{2}} = \boxed{a^{12}}$$

$$\begin{aligned}
 (64m^4)^{\frac{3}{2}} &= 64^{\frac{3}{2}}m^{12/2} \\
 &= 64^{3/2}m^6 \\
 &= \sqrt{64^3}m^6 \\
 &= (\sqrt{64})^3m^6 \\
 &= (8)^3m^6 \\
 &= \boxed{512m^6}
 \end{aligned}$$