

Solve $2(x+3)^{\frac{2}{3}} = 54$.

$$\left((x+3)^{\frac{2}{3}} \right)^{\frac{3}{2}} = (27)^{\frac{2}{3}}$$

$$x+3 = 27$$

$$x+3 = 9$$

$$\boxed{x=6}$$

5.5.15

Simplify and show your work.

$$(64n^{12})^{-\frac{1}{6}}$$

$$\frac{1}{(64n^{12})^{1/6}}$$

$$\frac{1}{64^{1/6} n^{12 \cdot \frac{1}{6}}}$$

$$= \frac{1}{2n^2}$$

Checking for Extraneous Solutions

Solve $\sqrt{x-3} + 5 = x$.

$$(\sqrt{x-3})^2 = (x-5)^2$$

$$x-3 = (x-5)(x-5)$$

x	-5
x^2	$-5x$
$-5x$	25

$$x-3 = x^2 - 10x + 25$$

$$0 = x^2 - 11x + 28$$

~~$$\begin{array}{r} \text{a.c.} \\ 28 \\ 7 \cdot -4 \\ + \\ -11 \\ \text{b} \end{array}$$

x	-7
x^2	$-7x$
$-4x$	28

$$0 = (x-4)(x-7)$$

$$0 = x-4$$

$$0 = x-7$$

$$\rightarrow 4 = x$$

Extraneous Solution

$$7 = x$$

$$\sqrt{(4)-3} + 5 = 4$$

$$\sqrt{1} + 5 = 4$$

$$1 + 5 \neq 4?$$

$$\sqrt{(7)-3} + 5 = 7$$

$$\sqrt{4} + 5 = 7$$

$$2 + 5 = 7 \checkmark$$

Solve $\sqrt{5x-1} + 3 = x$.

$$(\sqrt{5x-1})^2 = (x-3)^2$$

$$5x-1 = (x-3)(x-3)$$

	x	-3
x	x^2	$-3x$
-3	$-3x$	9

$$5x-1 = x^2 - 6x + 9$$

$$0 = x^2 - 11x + 10$$

$$\begin{array}{r} \text{a.c} \\ 10 \\ -10 \cdot -1 \\ + \\ -11 \\ b \end{array}$$

$$0 = (x-10)(x-1)$$

$$0 = x-10$$

$$10 = x$$

$$0 = x-1$$

$$1 = x$$

Extraneous

$$\sqrt{5(10)-1} + 3 = 10$$

$$\sqrt{49} + 3 = 10$$

$$7 + 3 = 10 \checkmark$$

$$\sqrt{5(1)-1} + 3 = 1$$

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

$$2 + 3 \neq 1$$

Simplifying Rational Exp.

Choose 4 from 1-8

Choose 2 from 9-12