

### Method 1: Apply Inverses

$$\frac{x^2}{3} - 6 = 2$$

+6      +6

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$$x^2 = 8 \cdot 3$$

$$x^2 = \pm 24$$

← must put ±√

$$x = \pm 2\sqrt{6}$$

OR  
 $x = 2\sqrt{6}, -2\sqrt{6}$

$$\sqrt{4x-7} + 2 = 5$$

-2      -2

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$$\sqrt{4x-7} = 3$$

$$4x-7 = 9$$

+7      +7

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$$4x = 16$$

/4      /4

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$$x = 4$$

### Method: Factoring

$$(x-3)^2 = 4x$$

$$(x-3)(x-3) = 4x$$

FOIL

$$x^2 - 6x + 9 = 4x$$

-4x      -4x

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$$x^2 - 10x + 9 = 0$$

$$(x-1)(x-9) = 0$$

$$x-1=0 \quad x-9=0$$

$$x=1 \quad x=9$$

extraneous

$$(x-3)^2 \neq x^2 - 3^2$$

(x-3)(x-3)

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

$$x=1 \quad 1-3 = \sqrt{4 \cdot 1}$$

$$-2 = \sqrt{4}$$

Extraneous Solution

$$x=9 \quad 9-3 = \sqrt{4 \cdot 9}$$

$$6 = \sqrt{36}$$

TRUE

$$x=9, \cancel{x=1}$$

### Method 3: Extraneous Solutions

$$3\sqrt{x} - \sqrt{x-16} = 0$$

+      +

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$$(3\sqrt{x})^2 = (\sqrt{x-16})^2$$

$$9x = x-16$$

-x      -x

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$$8x = -16$$

/8      /8

Check:  $x = -2$  extraneous solution  $\cancel{\circ}$

$$3\sqrt{x} - \sqrt{x-16} = 0$$

$$3\sqrt{-2} - \sqrt{-2-16} = 0$$

↑  
√-# !!

No Solutions  $\cancel{\circ}$

$$\frac{8x}{8} = \frac{-16}{8}$$

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$$x = -2$$

$$\sqrt{-\#} =$$

$$x = \frac{\cancel{-2} \pm \cancel{0}}{\cancel{8}}$$

extraneous

Solution