

September 29, 2015

8.6
#24) *Addition!*

$$i(2-5i) - (3-4i)$$

$$\boxed{2} - \boxed{5i} - \boxed{3} + \boxed{4i}$$

$$-1 - i$$

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#56) *Multiplication!*

$$(\sqrt{2} - i\sqrt{3})(2\sqrt{2} - 2i)$$

FOIL

$$4 - 2i\sqrt{2} - 2i\sqrt{6} + 2i^2\sqrt{3}$$

$$4 - 2i\sqrt{2} - 2i\sqrt{6} + 2(-1)\sqrt{3}$$

$$\boxed{4 - 2i\sqrt{2} - 2i\sqrt{6} - 2\sqrt{3}}$$

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#42)

$$i\sqrt{7}(2\sqrt{7} - 3i\sqrt{7})$$

$$(i\sqrt{7})(2\sqrt{7}) + (i\sqrt{7})(-3i\sqrt{7})$$

$$2i^2 7 - 3i^2 7$$

$$14i - 21(-1)$$

$$14i + 21$$

$$\boxed{21 + 14i}$$

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#70)

$$\frac{1 - i\sqrt{2}}{\sqrt{18} - \sqrt{-8}} = \frac{1 - i\sqrt{2}}{3\sqrt{2} - 2i\sqrt{2}}$$

$$\frac{(1 - i\sqrt{2})(3\sqrt{2} + 2i\sqrt{2})}{(3\sqrt{2} - 2i\sqrt{2})(3\sqrt{2} + 2i\sqrt{2})} = \frac{3\sqrt{2} + 2i\sqrt{2} - 2i\sqrt{2} - 2i^2(2)}{18 - 4i^2(2)}$$

FOIL

$$= \frac{3\sqrt{2} + 2i\sqrt{2} - 6i + 4}{18 + 8}$$

$$= \frac{3\sqrt{2} + 2i\sqrt{2} - 6i + 4}{26}$$

$$3\sqrt{2} + 2i\sqrt{2}$$

$\sqrt{2} = b$

$$\frac{3b}{a} + \frac{2bi}{b} \rightarrow a + bi$$

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8.7 Solving Radical Equations

$$(\sqrt{5x-4})^2 = (9)^2$$

*Steps * always isolate a radical first!*

① Raise each side to the power of the index of the radical.

$$5x - 4 = 81$$

$$5x = 85$$

$$x = 17$$

② It is mandatory to check all solutions on the original equation.

Ok $x = 17$

$$\sqrt{5(17)-4} = 9$$

$$\sqrt{5(17)-4} = 9$$

$$\sqrt{85-4} = 9$$

$$\sqrt{81} = 9$$

$$9 = 9 \checkmark$$

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$$(\sqrt{2x})^2 = (-4)^2 \quad * \text{NO Solution}$$

$$2x = 16$$

$$x = 8$$

Ok

$$\sqrt{2(8)} = -4$$

$$\sqrt{16} = -4$$

$$4 \neq -4$$

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$$\left(\sqrt[3]{3-2x}\right)^3 = (-2)^3$$

$$3-2x = -8$$

$$-2x = -11$$

ok $x = \frac{11}{2}$

$$\sqrt[3]{3-2\left(\frac{11}{2}\right)} = -2$$

$$\sqrt[3]{3-11} = -2$$

$$\sqrt[3]{-8} = -2$$

$$-2 = -2 \checkmark$$

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$$\left(\sqrt{x+1}\right)^2 = (2-\sqrt{x})^2$$

* Note: With more than one radical in an equation, always isolate one first.

$$x+1 = (2-\sqrt{x})(2-\sqrt{x})$$

FOIL

$$x+1 = 4-2\sqrt{x}-2\sqrt{x}+x$$

$$x+1 = 4-4\sqrt{x}+x$$

isolate!

$$x+1-4-x = -4\sqrt{x}$$

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

$$\left(\frac{3}{4}\right)^2 = (\sqrt{x})^2$$

$$\frac{9}{16} = x$$

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