Bellwork:

Solve: $18x^2-22x=28$

$18x^2-22x-28=0$

$2(9x^2-11x-14)=0$

$1\cdot 14$, $2\cdot 7$; $1\cdot 9$, $3\cdot 3$; 126: $7\cdot 18$

$2(9x+7)(x-2)=0$

$2=0$ $\quad 9x+7=0$ $\quad x-2=0$

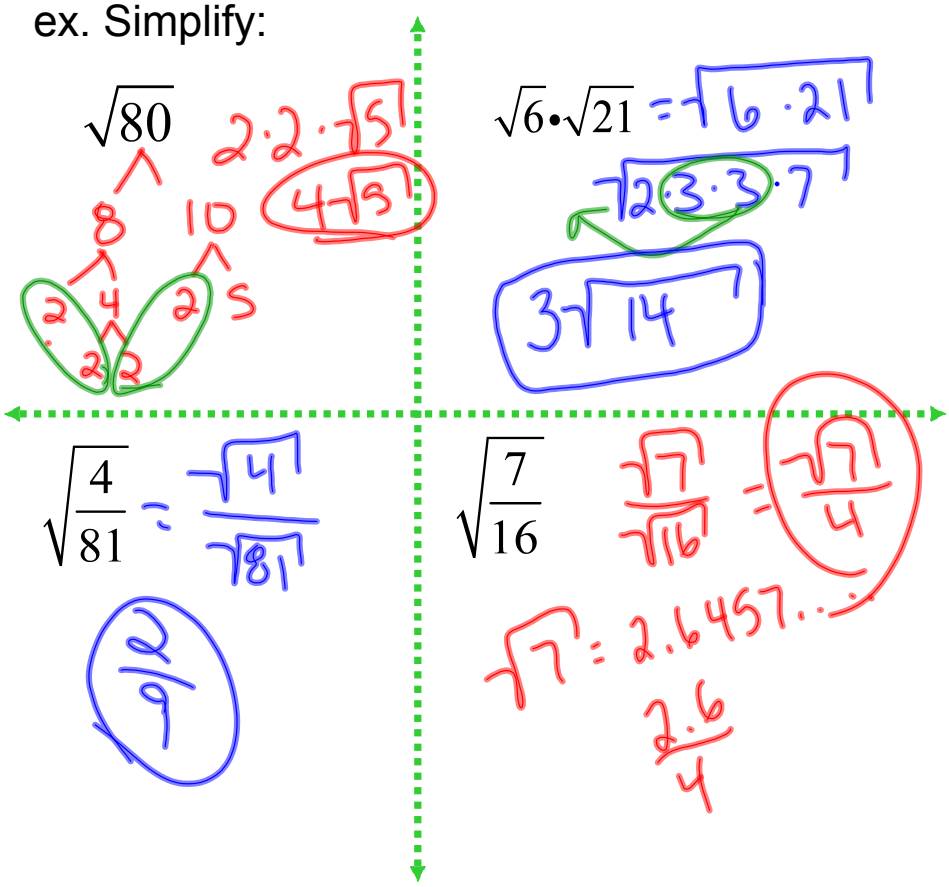
$x=\frac{-7}{9}$ $\quad x=2$

Chapter 4.5: Solve Quadratic Equations by finding Square Roots.

Properties:

$$\sqrt{\frac{A}{B}}=\frac{\sqrt{A}}{\sqrt{B}} \qquad \sqrt{AB}=\sqrt{A}\sqrt{B}$$

ex. Simplify:



Rationalizing the Denominator:

- the process of getting the radical off the denominator by multiplying by the conjugate....

$(a + \sqrt{b})(a - \sqrt{b})$

$\sqrt{b}\ \sqrt{b}$

$\sqrt{b^2}$

$a^2 + a\sqrt{b} - a\sqrt{b} - b$

$a^2 - b$

ex. Simplify:

$\sqrt{\frac{5}{2}} = \frac{\sqrt{5}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{10}}{2}$

$\frac{3}{7+\sqrt{2}} \cdot \frac{(7-\sqrt{2})}{(7-\sqrt{2})}$ F O I L

$\frac{21-3\sqrt{2}}{49-2}$

$\frac{21-3\sqrt{2}}{47}$

$\sqrt{\frac{4}{3}} \quad \frac{\sqrt{4}}{\sqrt{3}}$

$\frac{2}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$

$\frac{2}{3+\sqrt{5}} \cdot \frac{(3-\sqrt{5})}{(3-\sqrt{5})} = \frac{6-2\sqrt{5}}{9-5}$

$\frac{6-2\sqrt{5}}{4}$

$\frac{3-\sqrt{5}}{2}$

ex. Solve: $3x^2 + 5 = 41$

$-5 \quad -5$

$\frac{3x^2}{3} = \frac{36}{3}$

$\sqrt{x^2} = \sqrt{12}$

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

$x = \pm 2\sqrt{3}$

ex. What are the solutions?

$$\frac{1}{5}(x+3)^2 = 7$$

$\sqrt{35}$ ^ 7 5

5 5

$\sqrt{(x+3)^2} = \sqrt{35}$

$x+3 = \pm\sqrt{35}$

$-3 \quad -3$

$x = -3 \pm \sqrt{35}$

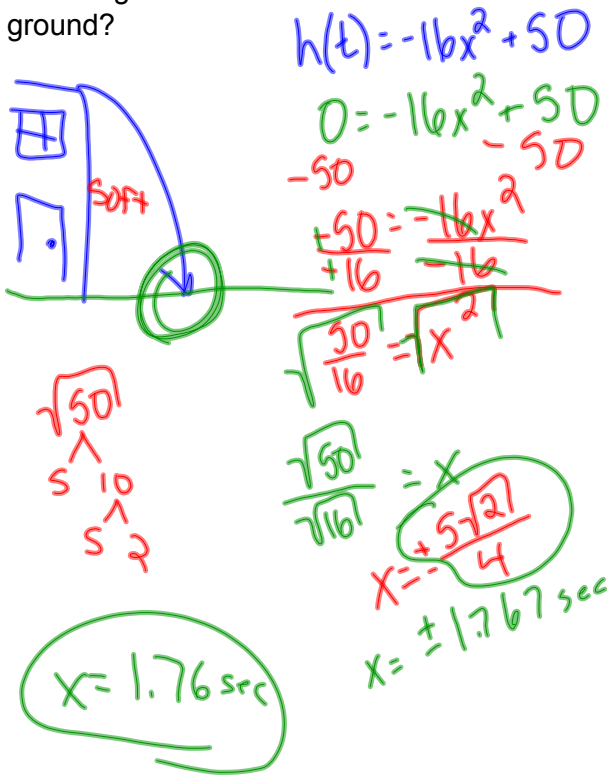
$x = -3+\sqrt{35}$ $x = -3-\sqrt{35}$

Modeling Dropped Objects:

$$h(t) = -16t^2 + h_o$$

where t is time, h_o is the initial height and h(t) is height after time, t.

ex. For a science competition, students must design a container that prevents an egg from breaking when dropped from a height of 50ft. How long does the container take to hit the ground?



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