

Spiral Review:

Simplify.

1. $\sqrt{40a^5b^7}$

$2a^2b^3\sqrt{10ab}$

2. $\sqrt[3]{-81x^6y^{10}}$

$-3x^2y^3\sqrt[3]{y}$

3. $\frac{x^2-81}{x^5} \cdot \frac{x^{12}}{x^2-11x+18}$

$\frac{x^7(x+9)}{x-2}$

4. $2x^3 + 16$

$2(x+2)(x^2-2x+4)$

Review: Solving Algebraic equations and Quadratic formula

Just like with our algebraic expression:

FIRST, factor!!

Get a common denominator, but this time we will use denominator to clear the fraction and solve.

Quadratic Formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

When do we use this?

Solve the equation.

$$1. \frac{x(10)}{3} - \frac{x(10)}{7} = 3(10)$$

LCD: 10

$$2x - 5x = 30$$

$$\frac{-3x}{-3} = \frac{30}{-3}$$

$$\boxed{x = -10}$$

$$2. \frac{1}{x-2} + \frac{3}{x+3} = \frac{4}{x^2+x-6}$$
$$\frac{1(x+3)}{x+3} + \frac{3(x-2)}{x+3} = \frac{4(x+3)}{(x+3)(x-2)}$$

LCD: $(x+3)(x-2)$

$$x+3+3x-6=4$$

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

$$\frac{4x}{4} = \frac{7}{4}$$

$$\boxed{x = \frac{7}{4}}$$

$$3. \frac{6x(x+3)}{x} + \frac{-2x(x+3)}{x+3} = \frac{3(x+5)x(x+3)}{x(x+3)}$$

$$\text{LCD: } \underline{x(x+3)}$$

$$6x+18-2x=3x+15$$

$$\begin{array}{r} 4x+18=3x+15 \\ -3x \quad -3x \\ \hline \end{array}$$

$$\begin{array}{r} x+18=15 \\ -18 \quad +18 \\ \hline \end{array}$$

$$\boxed{x=-3}$$

Solve by factoring.

$$4. x^2 - 10x + 9 = 0$$

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

$$\begin{array}{cc} \downarrow & \downarrow \\ x-9=0 & x-1=0 \\ \boxed{x=9} & \boxed{x=1} \end{array}$$

$$5. 2x^2 = 19x + 33$$

$$\frac{-19x-33 \quad -19x \quad -33}{-19x-33}$$

$$2x^2 - 19x - 33 = 0$$

$$(2x+3)(x-11) = 0$$

$$\begin{array}{cc} \downarrow & \downarrow \\ 2x+3=0 & x-11=0 \\ \boxed{x=-\frac{3}{2}} & \boxed{x=11} \end{array}$$

Solve by using Quadratic Formula.

6. $x^2 - 10x + 22 = 0$

$a=1, b=-10, c=22$

$$x = \frac{10 \pm \sqrt{(-10)^2 - 4(1)(22)}}{2(1)}$$

$$= \frac{10 \pm \sqrt{12}}{2}$$

(Note: Handwritten annotations show a '4' with a circled '2' and a circled '2' next to the '12' in the radicand, indicating $12 = 4 \times 3$)

$$= \frac{10 \pm 2\sqrt{3}}{2}$$

$$= \boxed{5 \pm \sqrt{3}}$$

7. $9x^2 - 6x - 35 = 0$

$a=9, b=-6, c=-35$

$$x = \frac{6 \pm \sqrt{(-6)^2 - 4(9)(-35)}}{2(9)}$$

$$= \frac{6 \pm \sqrt{1296}}{18}$$

$$= \frac{6 \pm 36}{18}$$

$$= \frac{1 \pm 6}{3}$$

(Note: Handwritten arrows point from the fraction to two boxed results: $\frac{1+6}{3} = \frac{7}{3}$ and $\frac{1-6}{3} = \frac{-5}{3}$)

Turn-in Problems:

1. Solve.

$$\frac{15}{x} - 4 = \frac{6}{x} + 3$$

2. Solve by factoring.

$$9x^2 - 1 = 0$$

3. Solve by using Quadratic Formula.

$$4x^2 - 4x - 4 = 0$$

**Assignment:
Solving wkst
(15-29,81-87,103-113 odds)**