2.7 Add/Subtract Rational Expressions   Mar 5

Simplify and state restrictions

$$\frac{3}{8x^2} + \frac{1}{4x} - \frac{5}{6x^3}$$

$$= \frac{3(3x)}{24\ x^3} + \frac{1(6x^2)}{24\ x^3} - \frac{5(4\ )}{24\ x^3}$$

$(3x \quad)(2x \quad)$

$$= \frac{9x + 6x^2 - 20}{24\ x^3}$$

$$= \frac{6x^2 + 9x - 20}{24\ x^3}$$

$$\frac{3x}{2x+1} + \frac{4}{x-3}$$

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

$$= \frac{3x^2 - 9x + 8x + 4}{(2x+1)(x-3)}$$

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

$D = b^2 - 4ac$
$= (-1)^2 - 4(3)(4)$
$= -47$

$$\frac{2x}{x^2-1} - \frac{x+2}{x^2+3x-4}$$

$$= \frac{2x}{(x-1)(x+1)} - \frac{x+2}{(x+4)(x-1)}$$

$$= \frac{2x(x+4) - (x+2)(x+1)}{(x-1)(x+1)(x+4)}$$

$$= \frac{2x^2+8x - (x^2+x+2x+2)}{(x-1)(x+1)(x+4)}$$

$$= \frac{2x^2+8x - x^2 - 3x - 2}{(x-1)(x+1)(x+4)}$$

$$= \boxed{\frac{x^2+5x-2}{(x-1)(x+1)(x+4)}}$$

$$\frac{x-1}{x+1} + \frac{x}{x-2} \div \frac{x^2+2x+1}{x^2-4}$$

$$= \frac{x-1}{x+1} + \frac{x}{x-2} \cdot \frac{(x-2)(x+2)}{(x+1)^2}$$

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

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

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

$$= \boxed{\frac{2x^2+2x-1}{(x+1)^2}}$$

$$D = b^2 - 4ac$$
$$= 2^2 - 4(1)(2)$$
$$= 4 + 8$$
$$= 12 \longleftarrow \text{NOT PERFECT SQUARE.}$$

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