Bellwork Alg 2A Wednesday, May 31, 2017

Find each sum or difference. No need to state restrictions on the variables.

1.

$$\frac{4}{2x^2 - x - 10} - \frac{9}{2x^2 - 8}$$

2.

$$\frac{6}{2x^3 + 8x^2 - 42x} + \frac{5x}{4x^4 - 24x^3 + 36x^2}$$

3.

$$\frac{4}{3x^3 - 3x} - \frac{3}{x^3 + 3x^2 + 2x} - \frac{5}{6x^4 + 6x^3 - 12x^2}$$

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Alg 2A Bellwork 5-31-17

Answers

(1) $\dfrac{4}{2x^2-x-10} - \dfrac{9}{2x^2-8}$

$2x^2-x-10$: -20, -5, 4, -1 → $2x(x+2)(x-5)$

$2x^2-8 = 2(x^2-4) = 2(x+2)(x-2)$

$= \dfrac{2(x-2)}{2(x-2)} \cdot \dfrac{4}{(x+2)(2x-5)} - \dfrac{9}{2(x+2)(x-2)} \cdot \dfrac{(2x-5)}{(2x-5)}$

$= \dfrac{8x-16-18x+45}{2(x+2)(2x-5)}$

$= \boxed{\dfrac{-10x+29}{2(x+2)(2x-5)}}$

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(2) $\dfrac{6}{2x^3+8x^2-42x} + \dfrac{5x}{4x^4-24x^3+36x^2} =$

$2x(x^2+4x-21)$: -21, $+7$, -3, 4

$2x(x+7)(x-3)$

$4x^2(x^2-6x+9)$: 9, -3, -3, -6

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

$= \dfrac{2x(x-3)}{2x(x-3)} \cdot \dfrac{6}{2x(x+7)(x-3)} + \dfrac{5x}{4x^2(x-3)(x-3)} \cdot \dfrac{(x+7)}{(x+7)}$ (common denominator $12x(x-3)$)

$= \dfrac{12x^2-36x+5x^2+35x}{4x^2(x+7)(x-3)^2} = \boxed{\dfrac{17x^2-x}{4x^2(x+7)(x-3)^2}}$

(3) $\dfrac{4}{3x^3-3x} - \dfrac{3}{x^3+3x^2+2x} - \dfrac{5}{6x^4+6x^3-12x^2}$

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

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

$\dfrac{2x(x+2)}{2x(x+2)}$ $\dfrac{6x(x-1)}{6x(x-1)}$ $\dfrac{(x+1)}{(x+1)}$

$8x(x+2)$ $18x(x-1)$

$$= \frac{8x^2+16x-18x^2+18x-5x-5}{6x^2(x+2)(x\pm1)}$$

$$= \frac{-10x^2+29x-5}{6x^2(x+2)(x\pm1)}$$