Algebra 3 Assignment # 11

(1) Perform the indicated operations. Express each of the following as a single fraction in simplified form please.

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

(b) $\dfrac{x^2-3x+8}{2x-3} + \dfrac{2+4x-x^2}{3-2x}$

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

(d) $\left(\dfrac{5x+1}{x^2-3x+2} + \dfrac{3x-1}{x^2+x-6}\right) \cdot \dfrac{x^2+2x-3}{16x+8}$

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

(f) $\dfrac{3}{3x-1} + \dfrac{7x}{3x^2+5x-2} + \dfrac{x}{x+2}$

(g) $\dfrac{3x-1}{x^2-1} + \dfrac{3x+1}{x^2+3x+2} - \dfrac{2x+1}{x^2+x-2}$

(2) Express as a single fraction in simplified form please.

(a) $\dfrac{\dfrac{x^2+y^2}{x^2-y^2}}{\dfrac{x-y}{x+y} - \dfrac{x+y}{x-y}}$

(b) $\dfrac{x - \dfrac{2}{x+1}}{x + \dfrac{x-3}{x+1}}$

(c) $\dfrac{x+2-\dfrac{12}{x+3}}{x-5+\dfrac{16}{x+3}}$

(d) $\dfrac{4x^{-2}-y^{-2}}{2x^{-1}-y^{-1}}$

(3) In future math classes it will be necessary to decompose fractions into simpler fractions. Solve for A and B in each of the following.

(a) $\dfrac{2}{x^2-1} = \dfrac{A}{x+1} + \dfrac{B}{x-1}$

(b) $\dfrac{x-8}{2x^2-5x+2} = \dfrac{A}{2x-1} + \dfrac{B}{x-2}$

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Answers

(1) **(a)** $\dfrac{x^2 - 2}{(x - 1)(x - 2)}$

(b) $x - 2$

(c) $\dfrac{x + 1}{x - 1}$

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

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

(f) $\dfrac{3(x + 1)}{(3x - 1)}$

(g) $\dfrac{4}{x + 2}$

(2) **(a)** $-\dfrac{x^2 + y^2}{4xy}$

(b) $\dfrac{x + 2}{x + 3}$

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

(d) $\dfrac{x + 2y}{xy}$

(3) **(a)** $A = -1 , B = 1$

(b) $A = 5 , B = -2$