U1D9_T Review of Key Concepts

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U1D9_T
Review of...

U1D9 MCR3UI **Review of Key Concepts**

a) $\frac{x+5}{x} + \frac{1}{3} - \frac{4x}{x-3}$ LCD $3x(x-3)$

$= \frac{3(x-3)(x+5) + 1x(x-3) - 4x(3x)}{3x(x-3)}$

$= \frac{3(x^2+2x-15) + x^2-3x-12x^2}{3x(x-3)}$

$= \frac{3x^2+6x-45+x^2-3x-12x^2}{3x(x-3)}$

$= \boxed{\frac{-8x^2+3x-45}{3x(x-3)}}$, $x \neq 0, 3$

b) $\dfrac{3x^3y-15x^2y}{x^2-xy-2y^2} \times \dfrac{3x^2-5xy-2y^2}{3x^5+16x^4y+5x^3y^2}$

$= \dfrac{3x^2y(x-5)}{(x-2y)(x+1y)} \times \dfrac{(3x+y)(x-2y)}{x^3(3x+y)(x+5y)}$

$= \boxed{\dfrac{3y(x-5)}{x(x+y)(x+5y)}}$, $x \neq 2y, -y, 0, \frac{-y}{3}, -5y$

$3x^2+16xy+5y^2$

c) $\dfrac{\frac{x-5}{10x}}{\left[\frac{1}{x^2}-\frac{1}{5x}\right]}$

$= \left(\dfrac{x-5}{10x}\right) \div \left(\dfrac{1}{x^2}-\dfrac{1}{5x}\right)$ ← LCD $5x^2$

$= \left(\dfrac{x-5}{10x}\right) \div \left(\dfrac{5-x}{5x^2}\right)$

$= \dfrac{x-5}{10x} \times \dfrac{5x^2}{-(x-5)}$

$= \boxed{-\dfrac{x}{2}}$, $x \neq 0, 5$