1)

$(2x+3y)^2 - 3x(\frac{4}{3}x+4y) = 4x^2 + 12xy + 9y^2 -$

$- 4x^2 - 12xy = 9y^2 = 9 \cdot \sqrt{3}^2 = 27$

2) $28ab + (2a-7b)^2 = 28ab + 4a^2 - 28ab + 49b^2 =$

$= 4a^2 + 49b^2 = 4 \cdot 15 + 49 \cdot 8 = 452$

3) $(\frac{9}{2} + \frac{9}{5}) \cdot \frac{1}{a^2} = \frac{1}{2a} + \frac{1}{5a} = \frac{5}{10a} + \frac{2}{10a} =$

$= \frac{7}{10a} = \frac{7}{10 \cdot 0,7} = 1$

4) $(x - \frac{6x}{x+2}) : (\frac{x-4}{x+2}) = (x - \frac{6x}{x+2})(\frac{x+2}{x-4}) =$

$= x \cdot (\frac{x+2}{x-4}) - \frac{6x(x+2)}{(x-4)(x+2)} = \frac{x^2+2x}{x-4} - \frac{6x}{x-4} =$

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

5) $\left(\frac{4}{a^2} + \frac{9}{b^2}\right)(ab)^2 = \boxed{4b^2 + 9a^2}$

6) $\frac{5}{ak} \cdot k^4 q - \frac{10k+1}{2} = 5k - \frac{10k+1}{2} = \frac{10k}{2} - \frac{10k+1}{2} =$

$= -0,5$

7) $\frac{3x^2+4x}{x^2-2x} - \frac{2x+7}{x} - \frac{x+8}{x-2} = \frac{x(3x+4)}{x(x-2)} - \frac{2x+7}{x} -$

$- \frac{x+8}{x-2} = \frac{3x+4-x-8}{x-2} - \frac{2x+7}{x} = \frac{2x-4}{x-2} - \frac{2x+7}{x}$

$= \frac{2(x-2)}{x-2} - \frac{2x+7}{x} = \frac{2x}{x} - \frac{2x+7}{x} = \boxed{-\frac{7}{x}}$