

$$1) \frac{2a}{a^2-4} + \frac{a-1}{2-a} - \frac{4a}{a^2+4a+4} =$$

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

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

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

$$= \frac{2a^2 + \cancel{4a} - a^3 - \cancel{4a^2} - \cancel{4a} + a^2 + 4a + 4 - 4a^2 + 8a}{(a-2)(a+2)^2} =$$

$$= \frac{-a^3 - 5a^2 + 12a + 4}{(a-2)(a+2)^2} = \dots$$

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

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

$$\begin{aligned}
&= \frac{(x-1)(x+2) - 6x^2 + 8x^2 + 2x + 2}{2x(x-1)(x+1)} = \\
&= \frac{x^2 + x - \cancel{2} - 6x^2 + 8x^2 + 2x + \cancel{2}}{2x(x-1)(x+1)} = \\
&= \frac{3x^2 + 3x}{2x(x-1)(x+1)} = \frac{\cancel{3}x(x+1)}{\cancel{2}x(x-1)\cancel{(x+1)}} = \\
&= \frac{3}{2(x-1)}
\end{aligned}$$

Moltiplic. e divis. e potenza

$$\begin{aligned}
1) \quad & \frac{y^2 - 3y}{y^2 - 2y - 8} \cdot \frac{y^2 + 4y + 4}{3y} \cdot \frac{y^2 - 8y - 4}{y^2 - y - 6} = \\
&= \frac{\cancel{y}(y-3)}{\cancel{(y-4)}\cancel{(y+2)}} \cdot \frac{\cancel{(y+2)}^2}{3y} \cdot \frac{\cancel{(y-4)}(y+1)}{\cancel{(y-3)}\cancel{(y+2)}} = \\
&= \frac{y+1}{3}
\end{aligned}$$

$$\begin{aligned}
 2) \quad & \frac{15x^3y^2}{3x^2y+3xy} \cdot \frac{5x^2-20}{x^2-x-2} \cdot \frac{xy^4}{2x+4} = \\
 & = \frac{15x^3y^2}{3xy(x+1)} \cdot \frac{5(x-2)(x+2)}{(x-2)(x+1)} \cdot \frac{xy^4}{2(x+2)} = \\
 & = \frac{\cancel{15x^3y^2}}{\cancel{3xy}(x+1)} \cdot \frac{\cancel{(x-2)}(x+1)}{\cancel{5(x-2)}(x+2)} \cdot \frac{\cancel{2(x+2)}}{\cancel{xy^4}} = \\
 & = \frac{2x}{y^3}
 \end{aligned}$$

$$3) \quad \left( \frac{2a^2b^3}{x^4y^2} \right)^4 = \frac{16a^8b^{12}}{x^{16}y^8}$$

$$\begin{aligned}
 4) \quad & \left( \frac{2}{a^2-4a+4} + \frac{4}{a^3-6a^2+12a-8} \right)^{-3} \cdot \frac{(a^2-4a+4)^2}{a^3} = \\
 & = \left[ \frac{2}{(a-2)^2} + \frac{4}{(a-2)^3} \right]^{-3} \cdot \frac{(a-2)^4}{a^3} =
 \end{aligned}$$

$$= \left[ \frac{2a - \cancel{4} + \cancel{4}}{(a-2)^3} \right]^{-3} \cdot \frac{a^3}{(a-2)^4}$$

$$\frac{(a-2)^{\cancel{4} \ 5}}{2^3 \cdot \cancel{a^3}} \cdot \frac{\cancel{a^3}}{\cancel{(a-2)^4}} = \frac{(a-2)^5}{8}$$