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$$21. \frac{3x^2 - 3x - 6}{x^2 - 4} = \frac{3(x^2 - x - 2)}{(x-2)(x+2)} = \frac{3(x-2)(x+1)}{(x-2)(x+2)} = \frac{3(x+1)}{x+2}$$

$$22. \frac{x-2}{x^3-8} = \frac{x-2}{(x-2)(x^2+2x+4)} = \frac{1}{x^2+2x+4}$$

$$23. \frac{x^3-27}{x^3+3x^2+9x} = \frac{(x-3)(x^2+3x+9)}{x(x^2+3x+9)} = \frac{x-3}{x}$$

$$24. \frac{x^2+6x+9}{x^2-9} = \frac{(x+3)(x+3)}{(x+3)(x-3)} = \frac{x+3}{x-3}$$

$$25. \frac{15x^2-8x-18}{-20x^2+14x+12} \text{ in simplified form}$$

$$26. \frac{x^3-2x^2+x-2}{3x^2-3x-8}; \text{ in simplified form}$$

$$27. \frac{x^3+3x^2-2x-6}{x^3+27} = \frac{(x^2-2)(x+3)}{(x+3)(x^2-3x+9)} = \frac{x^2-2}{x^2-3x+9}$$

$$28. \frac{4xy^3}{x^2y} \cdot \frac{y}{8x} = \frac{4xy^4}{8x^3y} = \frac{y^3}{2x^2}$$

$$29. \frac{80x^4}{y^3} \cdot \frac{xy}{5x^2} = \frac{80x^5y}{5x^2y^3} = \frac{16x^3}{y^2}$$

$$31. \frac{x-3}{2x-8} \cdot \frac{6x^2-96}{x^2-9} = \frac{(x-3)6(x-4)(x+4)}{2(x-4)(x-3)(x+3)} = \frac{3(x+4)}{x+3}$$

$$32. \frac{x^2-x-6}{4x^3} \cdot \frac{x+1}{x^2+5x+6} = \frac{(x-3)(x+2)(x+1)}{4x^3(x+2)(x+3)} = \frac{(x-3)(x+1)}{4x^3(x+3)}$$

$$33. \frac{2x^2-2}{x^2-6x-7} \cdot (x^2-10x+21) = \frac{2(x-1)(x+1)(x-3)(x-7)}{(x-7)(x+1)} = 2(x-1)(x-3)$$

$$34. \frac{x^3+5x^2-x-5}{x^2-25} \cdot (x+1) = \frac{(x^2-1)(x+5)(x+1)}{(x+5)(x-5)} = \frac{(x-1)(x+1)^2}{(x-5)}$$

$$35. \frac{x-3}{-x^3+3x^2} \cdot (x^2+2x+1) = \frac{(x-3)(x+1)(x+1)}{-x^2(x-3)} = \frac{(x+1)^2}{-x^2}$$

$$36. \frac{32x^3y}{y^9} + \frac{8x^4}{y^6} = \frac{32x^3y \cdot y^6}{y^9 \cdot 8x^4} + \frac{32x^3y^7}{8x^4y^9} = \frac{4}{xy^2}$$

$$37. \frac{2xyz}{x^2z^2} + \frac{6y^3}{3xz} = \frac{2xyz \cdot 3xz}{x^2z^2 \cdot 6y^3} + \frac{6x^2yz^2}{6x^2y^3z^2} = \frac{1}{y^2}$$

$$39. \frac{x^2-14x+48}{x^2-6x} \div (3x-24) = \frac{(x-8)(x-6)}{x(x-6) \cdot 3(x-8)} = \frac{1}{3x}$$

$$40. \frac{2x^2-12x}{x^2-7x+6} \div \frac{2x}{3x-3} = \frac{2x(x-6) \cdot 3(x-1)}{(x-6)(x-1)2x} = 3$$

$$41. \frac{x^2+8x+16}{x+2} \div \frac{x^2+6x+8}{x^2-4} = \frac{(x+4)(x+4)(x-2)(x+2)}{(x+2)(x+2)(x+4)} = \frac{(x+4)(x-2)}{x+2}$$

$$42. \frac{x^2+6x-7}{3x^2} \div \frac{x+7}{6x} = \frac{(x+7)(x-1)6x}{3x^2(x+7)} = \frac{2(x-1)}{x}$$

$$43. (x^2+6x-27) \div \frac{3x^2+27x}{x+5} = \frac{(x+9)(x-3)(x+5)}{3x(x+9)} = \frac{(x-3)(x+5)}{3x}$$

$$45. \frac{x^2-x-12}{8x^2} \div \frac{x^3+3x^2}{8x^3-2x^2} + \frac{4x-1}{x+2} = \frac{(x-4)(x+3)}{8x^2} \cdot \frac{2x^2(4x-1)}{x^2(x+3)} \cdot \frac{(x+2)}{(4x-1)} = \frac{(x-4)(x+2)}{4x^2}$$

$$46. \frac{x^2+11x}{x-2} \div (3x^2+6x) \cdot \frac{x^2-4}{x+11} = \frac{x(x+11)}{(x-2)} \cdot \frac{1}{3x(x+2)} \cdot \frac{(x-2)(x+2)}{(x+11)} = \frac{1}{3}$$

$$47. \frac{2x^2+x-15}{2x^2-11x-21} \cdot (6x+9) + \frac{2x-5}{3x-21} = \frac{(2x-5)(x+3)}{(2x+3)(x-7)} \cdot 3(2x+3) \cdot \frac{3(x-7)}{(2x-5)} = 9(x+3)$$

$$48. (x^3+8) \cdot \frac{x-2}{x^2-2x+4} + \frac{x^2-4}{x-6} = (x+2)(x^2-2x+4) \cdot \frac{(x-2)}{(x^2-2x+4)} \cdot \frac{(x-6)}{(x-2)(x+2)} = x-6$$

$$49. \frac{x^2+12x+20}{4x^2-9} \cdot \frac{6x^3-9x^2}{x^3+10x^2} \cdot (2x+3) = \frac{(x+2)(x+10)}{(2x+3)(2x-3)} \cdot \frac{3x^2(2x-3)}{x^2(x+10)} \cdot (2x+3) = 3(x+2)$$