6. **Simplify:** $\dfrac{x^2 + 7x + 12}{x^2 + 4x + 3}$

Solution: $\dfrac{x^2 + 7x + 12}{x^2 + 4x + 3} = \dfrac{(x + 3)(x + 4)}{(x + 3)(x + 1)} = \dfrac{x + 4}{x + 1}$

7. **Simplify:** $\dfrac{x^2 - 6x + 8}{x^2 - 3x + 2}$

Solution: $\dfrac{x^2 - 6x + 8}{x^2 - 3x + 2} = \dfrac{(x - 4)(x - 2)}{(x - 1)(x - 2)} = \dfrac{x - 4}{x - 1}$

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8. **Simplify:** $\dfrac{4x^2 - 13x + 3}{4x - 1}$

Solution: $\dfrac{4x^2 - 13x + 3}{4x - 1} = \dfrac{(4x - 1)(x - 3)}{4x - 1} = (x - 3)$

9. **Simplify:** $\dfrac{(x - 1)(x - 2)(x^2 - x - 72)}{(x - 9)(x^2 + x - 2)}$

Solution: $= \dfrac{(x - 1)(x - 2)(x - 9)(x + 8)}{(x - 9)(x + 2)(x - 1)} = \dfrac{(x - 2)(x + 8)}{x + 2}$

10. **Simplify:** $\dfrac{2x^4 - 162}{(x^2 + 9)(2x - 6)}$

Solution: $\dfrac{2x^4 - 162}{(x^2 + 9)(2x - 6)} = \dfrac{2(x^4 - 81)}{(x^2 + 9)\,2(x - 3)} = \dfrac{2(x^2 + 9)(x - 3)(x + 3)}{(x^2 + 9)\,2(x - 3)}$

$= x + 3$