Write the improper fraction in proper form using long division.

1. $\dfrac{x^2+5}{x^2-4}$

2. $\dfrac{3x^4+x^2-2}{x^3+8}$

Write the partial fraction decomposition of each rational expression.

3. $\dfrac{5x+4}{x(x+2)}$

4. $\dfrac{9x+1}{x^2+x-12}$

5. $\dfrac{5x^2+3x+1}{x^3+x^2}$

6. $\dfrac{3x^2+1}{x^3+x}$

7. $\dfrac{x^3+1}{(x^2+16)^2}$

Rewrite the improper fraction. Find the partial fraction decomposition of the proper fraction.

8. $\dfrac{x^5+x^4-x^2+2}{x^4-2x^2+1}$