Dividing Polynomials; Synthetic Division

1. Divide and simplify:

$$\frac{5x^4 - 15x^2}{5x^2}$$

2. Divide and simplify:

$$\frac{2x^3 y^4 - 3x^2 y^3 - 5xy}{4x^2 y^2}$$

3. Divide using long division:

$$\frac{x^2 - 10x + 16}{x - 2}$$

4. Divide using long division:

$$\frac{x^3 - x^2 - 11x + 3}{x + 3}$$

5. Divide using long division:

$$\frac{x^2 - 9x - 1}{x - 2}$$

6. Divide using long division:

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

7. Divide using synthetic division:

$$\frac{x^2 - 6x + 8}{x - 2}$$

8. Divide using synthetic division:

$$\frac{x^3 - 5x - 2}{x + 4}$$

9. Divide using synthetic division:

$$\frac{x^4 - 3x^2 + 5}{x - 2}$$