1. Divide each of the following polynomials by the suggested monomial.

   a. \( \frac{32a^3 + 24a^3}{8a^3} \)

   b. \( \frac{36x^5 + 72x^3 + 48x^2}{6x^2} \)

   c. \( \frac{12m^5 + 20m^4 + 32m^2}{4m^3} \)

2. (REVIEW) Complete the following long division problem: \( 385274 \div 12 \)

   \[ 12 \overline{385274} \]

3. Use long division to divide the following polynomials. \( \left( x^4 + 5x^3 + 3x^2 - 8x + 3 \right) \div (x + 3) \)

   \[ x + 3 \overline{x^4 + 5x^3 + 3x^2 - 8x + 3} \]

4. Use long division to divide \( \left( 2x^4 - 7x^3 + 10x^2 - 6x - 3 \right) \) by \( (x - 2) \)

5. Use long division to divide: \( \frac{2x^4 - 3x^3 - x^2 + 8x - 6}{2x + 3} \)
6. Use long division to divide \((4x^4 + 3x^2 + 2x - 2)\) by \((2x - 1)\)

7. Use long division to divide:
\[
\frac{x^5 + 5x^4 - x^3 - 22x^2 + x + 6}{x^2 + 3x - 2}
\]

8. Use long division to find the quotient of \(3x^3 - 12\) and \(x^2 + 2x + 3\)

9. Use long division to determine.
\[
\frac{(6x^4 + 8x^3 - 11x^2 - 7x + 6)}{(2x^2 + 2x - 3)}
\]

10. Rewrite \(2x^3 + 3x^2 + 4x - 5\) as a nested polynomial.

11. Use the nested polynomial to easily evaluate \(2x^3 + 3x^2 + 4x - 5\) when \(x = 2\).

12. Use the following format to quickly evaluate \(2x^3 + 3x^2 + 4x - 5\) when \(x = 2\).

\[
\begin{array}{c|cccc}
2 & 2 & 3 & 4 & -5 \\
\hline
 & & & & 2 \\
\end{array}
\]
13. Use long division to find the following quotient: \( \frac{2x^3 + 3x^2 + 4x - 5}{x - 2} \)

(Compare the answer from problem #12 with problem #11.)

14. Use synthetic division to divide
\[ \frac{x^4 + 7x^3 + 17x^2 + 13x - 6}{x + 3} \]

15. Use synthetic division to divide
\[ \frac{x^4 + 3x^3 + 2x^2 + x - 6}{x + 2} \]

16. Use synthetic division to divide
\[ \frac{2x^4 - 5x^3 - 7x - 6}{x - 3} \]

17. Use synthetic division to evaluate
\[ 2x^3 + 3x^2 - 4x - 2 \] at \( x = 3 \)

18. Use synthetic division find the remainder of
\[ \frac{3x^4 + 10x^3 - 6x^2 + 5x - 7}{x + 4} \]

19. Which of the following is a factor of
\[ 2x^5 - 3x^3 + 6x^2 - 5x + 6 \]

a. \( x+1 \)  
   b. \( x - 2 \)
   c. \( x+2 \)  
   d. \( x - 1 \)