

The following problems WILL have remainders. Verify you are correct by using the remainder theorem.

1. $x^2 + 9x - 7 \div x - 3$

2. $2x^3 + 7x^2 - 18x - 22 \div x + 4$

3. $\frac{3x^3 - 5x^2 + 10x - 3}{3x + 1}$

4. $2x^3 - 9x^2 + 15 \div 2x - 5$

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

The following problems WILL NOT have remainders.

1. $\frac{2x^3+3x^2-8x-12}{2x+3}$

2. $x^3 - 2x^2 - 75 \div x - 5$

3. $x^4 + 4x^2 - 45 \div x^2 + 9$

4. $x^3 - 27 \cdot (x - 3)^{-1}$

5. $2x^4 + 5x^3 + 11x^2 + 35x - 21 \div 2x - 1$

Divide by using long or tabular division.

- If your answer has a remainder, check your answer by using the remainder theorem.

OR

- If your answer does not have a remainder, solve to find the roots by factoring or using quadratic formula.

1. $x^3 + 7x^2 + 14x + 3 \div x + 2$

2. $\frac{5x^4 + 2x^3 - 6x^2 + 2x + 4}{x^2 - 1}$

3. $2x^3 - 3x^2 - 11x + 6 \cdot (x + 2)^{-1}$

4. $6x^4 - 7x^3 - 32x^2 + 171x - 210 \div x^2 - 3x + 6$

5. $\frac{x^3 - 2x^2 + 6x - 6}{x - 3}$

6. $x^3 - 5x^2 + 8x + 4 \div x - 1$

7. $7x^3 - 8x^2 - 13x + 2 \div 7x - 1$

8. $27x^3 + 9x^2 - 3x - 10 \div 3x - 2$

9. $x^4 - 9 \cdot (x^2 + 3)^{-1}$

10. $x^6 + 2x^5 - 5x^4 + 6x^3 - 28x^2 - 8x + 32 \div x^2 + 4$