These notes give extra examples of polynomial division problems that you can practice with using polynomial long division, or if possible, synthetic division. For examples how to do synthetic division, see the additional notes. Some of the problems below *will have* a non-zero remainder term.

These questions you should get a zero remainder.

Exercise 1. *Divide:* $\frac{12x^3-11x^2+9x+18}{4x+3}$

Exercise 2. *Divide:* $\frac{x^3-1}{x-1}$

Exercise 3. *Divide:* $\frac{4x^3-5x^2-2x+3}{4x+3}$

Exercise 4. *Divide:* $\frac{2x^3+7x^2+4x-3}{2x+3}$

Exercise 5. *Divide:* $\frac{4x^3-5x^2-2x+3}{4x+3}$

Exercise 6. *Divide:* $\frac{6x^2-x-40}{2x+5}$

Exercise 7. *Divide:* $\frac{6x^2-x-40}{2x+5}$

These questions you should get a zero remainder.

Exercise 8. *Divide:* $\frac{x^3-4x^2+2x+5}{x-2}$

Exercise 9. *Divide:* $\frac{2x^3+4x^2-5}{x+3}$

Exercise 10. *Divide:* $\frac{2x^3+7x^2-4x+7}{x^2+2x-1}$

Try these without knowing remainder beforehand.

Exercise 11. *Divide:* $\frac{x^2-4}{x-2}$

Exercise 12. *Divide:* $\frac{x^3+15x^2+49x-55}{x+7}$

Exercise 13. *Divide:* $\frac{24x^3-38x^2+29x-60}{4x-7}$

Exercise 14. *Divide:* $\frac{x^3-16x^2+71x-56}{x-8}$

Exercise 15. *Divide:* $\frac{x^3-26x-41}{x+4}$

Exercise 16. *Divide:* $\frac{x^3-x^2-16x+8}{x-4}$