Given one zero of the polynomial function, find the other zeros. No calc! ☺ CW

Omit #11
- if factorable - factor 1st
- otherwise Rat'l Root Thm

1. $f(x) = x^3 - 8x^2 + 5x + 14$; $x = 2, -1, 7$
2. $f(x) = 12x^3 + 8x^2 - 13x + 3$; $x = \frac{1}{2}, \frac{1}{3}, -\frac{3}{2}$
3. $f(x) = x^3 + x^2 - 13x + 3$; $x = 3, -2 \pm \sqrt{5}$
4. $f(x) = 2x^4 - 9x^3 + 4x^2 + 21x - 18$; $x = 2, 1, 3, -\frac{3}{2}$
5. $f(x) = x^4 + 2x^3 - 14x^2 - 32x - 32$; $x = -1+i, -1-i, \pm 4$

For each of the following functions,

a. **Find all zeros**
b. **Plot the *x*-intercepts and roughly sketch the graph (without using a calculator)**
c. **Describe its end behavior.**

☺

6. $f(x) = x^3 + x^2 + x + 1$ $x = \pm i, -1$
7. $f(x) = (x-1)(x^2 + x + 1)$ $x = 1, \frac{-1 \pm i\sqrt{3}}{2}$
8. $f(x) = 2x^3 + 3x^2 - 11x - 6$ $x = -\frac{1}{2}, -3, 2$
9. $f(x) = (x-3)^2(x+2)(x-1)$ $x = 3, -2, 1$ DR
10. $f(x) = 2x^4 + x^3 + x^2 + x - 1$ $x = \frac{1}{2}, -1, \pm i$
11. ~~$f(x) = 2x^6 - 6x^4 + 4x^2 - 12$~~
12. $f(x) = (x+2)(x^2 + 2x + 2)$ $x = -2, -1 \pm i$
13. $f(x) = -x^4 + 3x^2 - 2$ $-1, 1, \pm\sqrt{2}$
14. $f(x) = 2x^5 - 4x^4 - 2x^3 + 28x^2$ $x = 0, -2, 2 \pm i\sqrt{3}$ DR
15. $f(x) = x^3(x+3)(x-5)$ $x = 0$ TR $-3, 5$