1. $x = 1, -1, 0$

   $$\lim_{x \to -\infty} f(x) = -\infty \qquad \lim_{x \to \infty} f(x) = \infty$$

2. .

3. $x = -7, -2, 1, 8$

   $$\lim_{x \to -\infty} f(x) = \infty \qquad \lim_{x \to \infty} f(x) = \infty$$

4. .

5. $x = 2, -5$

6. .

7. $x = 6, -6$

8. .

9. $x = 0, -7, 7$

10. .

11. Degree: 3; Zeros: $x = 1, -9$; negative odd

    $$\lim_{x \to -\infty} f(x) = \infty \qquad \lim_{x \to \infty} f(x) = -\infty$$

12. .

13. Degree: 3; Zeros: $x = 0, 8$; positive odd

    $$\lim_{x \to -\infty} f(x) = -\infty \qquad \lim_{x \to \infty} f(x) = \infty$$

14.

15. Degree: 2;

    Zeros: $x = 8.5, -0.5 \; or \; 4 \pm 2\sqrt{5}$;

    positive even

    $$\lim_{x \to -\infty} f(x) = \infty \qquad \lim_{x \to \infty} f(x) = \infty$$

16. .

17. Degree: 2;

    Zeros: $x = -\frac{1}{4}, 1$; negative even

    $$\lim_{x \to -\infty} f(x) = -\infty \qquad \lim_{x \to \infty} f(x) = -\infty$$