1. finite differences

3. $f(x) = (x + 1)(x - 1)(x - 2)$

5. $f(x) = \frac{1}{7}(x + 5)(x - 1)(x - 4)$

7. $3; f(x) = \frac{2}{3}x^3 + 4x^2 - \frac{1}{3}x - 4$

9. $4; f(x) = -3x^4 - 5x^3 + 9x^2 + 3x - 1$

11. $4; f(x) = x^4 - 15x^3 + 81x^2 - 183x + 142$

16. $y = -0.22x^2 + 6.4x + 10$; about 27 years old

17. $0.002x^2 + 0.601x - 2.493$; about 15.9 mph

18. **a.** a cubic function; The data rises, but not linearly. The end behavior models that of a cubic function.

b. The third set of finite differences; It appears to be a cubic function.