1. Sketch the quadratic polynomial f given by

$$f(x) = -3x^2 + 5x + 7.$$

2. Identify the zeros and order of each zero of f where f is given by

$$f(x) = -4(x+6)^3(x+2)^4(x-2)^7(x-6)^8.$$

Sketch all possible local behaviors at each zero by using only the order of each zero.

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3. Determine the asymptotic behavior of the polynomial f given by

$$f(x) = -4(x+6)^3(x+2)^4(x-2)^7(x-6)^8.$$

4. Use the local and global behavior of a polynomial to sketch f, where f is given by

$$f(x) = -4(x+6)^3(x+2)^4(x-2)^7(x-6)^8.$$

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5. Identify the zeros and poles and the order of each zero and pole of f where f is given by

$$f(x) = \frac{x(x+7)^4}{(x-2)^6(x-5)^7}.$$

Sketch all possible local behaviors at each zero by using only the order of each zero.

6. Take f to be the polynomial given by

$$f(x) = -9x^4(x+6)^8(x+2)^9(x-4)^2.$$

Sketch f and use y-axis inversion to sketch g, where g is given by

$$g(x) = \frac{1}{-9x^4(x+6)^8(x+2)^9(x-4)^2}.$$

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7. Use the global and local behavior of a rational function to sketch f, where f is given by

$$f(x) = \frac{x(x+7)^4}{(x-2)^6(x-5)^7}.$$

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