You should be able to complete all of these problems without a calculator.

1. Expand (multiply) a polynomial expression or function to rewrite it in standard form

(a) Example: Expand: $-(x + 2)^2 + 1$
(b) Example: Expand: $f(x) = -2(x + 3)^2 - 5$

2. Factor a polynomial expression.

(a) Example: Factor: $2x^2 + 5x - 12$
(b) Example: Factor: $-6x^4 + 4x$
(c) Example: Factor: $2x^3 + 3x^2 - 6x - 9$
(d) Example: Factor: $2x^3 - 18x$

3. Evaluate a polynomial expression or function algebraically.

(a) Example: Evaluate $f(-2)$ for $f(x) = -x^2 + 2x - 3$
(b) Example: Evaluate $-(x - 2)^2 + 4$ for $x = -3$

4. Solve a polynomial equation.

(a) Example: Solve $\frac{1}{4}x^2 + \frac{1}{2}x = 6$
(b) Example: Solve $f(x) = 5$ for $f(x) = \frac{1}{2}(x - 2)^2 + 3$
(c) Example: Solve $x(x - 3) + 7 = 10 - 3(x - 2)$
(d) Example: Solve $2x^3 + 5 = -49$

5. Make a table of values for a quadratic (second-degree polynomial) function.

(a) Example: Make table of values with at least five points: $f(x) = -(x - 3)^2 + 5$
(b) Example: Make table of values with at least five points: $f(x) = 2(x + 1)^2 - 4$

6. Finding intercepts (Solving $f(x) = 0$ to find $x$-intercept(s). Evaluating $f(0)$ to find the $y$-intercept.)

(a) Example: Find the $x$- and $y$-intercept for $f(x) = -2(x - 4)^2 + 7$