Sketching Quadratics by Completing the Square

Examples:

$$f(x) = x^2 + 6x - 7$$

$$f(x) = 2x^2 - 8x + 3$$

$$f(x) = \frac{3}{2}x^2 - \frac{5}{2}x + 1$$

Section 1 — Perfect square trinomials

1. $f(x) = x^2 + 10x + 25$
2. $f(x) = x^2 - 12x + 36$

Section 2 — Integers

3. $f(x) = x^2 + 11x + 30$
4. $f(x) = x^2 - 5x - 24$

Section 3 —Less friendly

5. $f(x) = x^2 + 2x - 35$
6. $f(x) = x^2 - 9x + 14$

Section 4 — Non-unit a with obvious GCF

7. $f(x) = 2x^2 + 10x + 12$
8. $f(x) = 3x^2 - 15x - 18$

Section 5 — Non-unit a, no obvious GCF

9. $f(x) = 2x^2 + 7x + 3$
10. $f(x) = 3x^2 - 11x - 4$

Section 6 — Larger coefficients

11. $f(x) = 6x^2 - 19x - 7$
12. $f(x) = 8x^2 + 4x - 15$

Section 7 — Fractions & decimals

13. $f(x) = 0.5x^2 + 2.5x + 2$
14. $f(x) = \frac{3}{2}x^2 - \frac{7}{2}x - 2$

Section 8 — Negative leading coefficient

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