

Problem 1. Sketch the following subsets of \mathbb{R}^2 .

(a) $[1, 2] \times [1, 2]$

(b) $[1, 2) \times \{2, 4, 5\}$

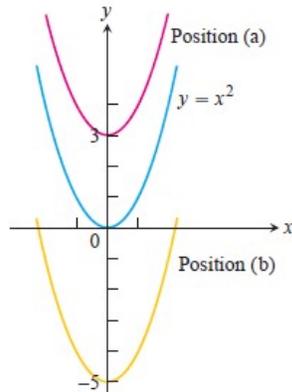
(c) $\{(x, y) \in \mathbb{R}^2 \mid 2x + 3y = 6\}$

(d) $\{(x, y) \in \mathbb{R}^2 \mid x^2 + y^2 \leq 4\}$

(e) $\{(x, y) \in \mathbb{R}^2 \mid 1 \leq x \leq 3 \text{ and } 1 \leq y \leq x^2\}$

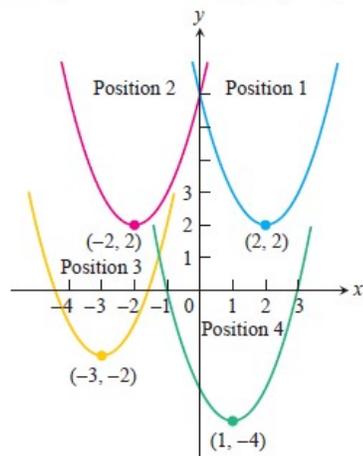
Problem 2. Answer these questions from section 1.5 regarding shifting parabolas.

16. The accompanying figure shows the graph of $y = x^2$ shifted to two new positions. Write equations for the new graphs.



17. Match the equations listed in parts (a)–(d) to the graphs in the accompanying figure.

- a. $y = (x - 1)^2 - 4$ b. $y = (x - 2)^2 + 2$
 c. $y = (x + 2)^2 + 2$ d. $y = (x + 3)^2 - 2$



18. The accompanying figure shows the graph of $y = -x^2$ shifted to four new positions. Write an equation for each new graph.

