

Quadratic Relations in Vertex Form

- The expression $y = a(x - p)^2 + q$ defines a quadratic relation in **vertex form**.
- The coordinates of the vertex of the corresponding parabola are (p, q) .
- If $a > 0$, the parabola opens upward. If $a < 0$, the parabola opens downward.

Exercise:

1) Match the relation with the proper diagram

a) $y = 2(x - 1)^2 - 3$

b) $y = (x - 2)^2 - 5$

c) $y = x^2 + 3$

d) $y = -2(x + 1)^2 + 3$

e) $y = \frac{-1}{2}(x - 2)^2 + 3$

f) $y = (x - 1)^2 + 2$

g) $y = \frac{-1}{2}(x + 2)^2 + 3$

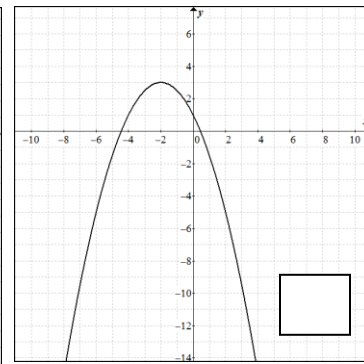
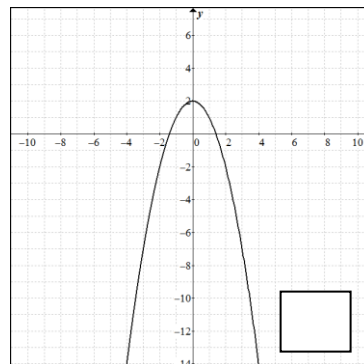
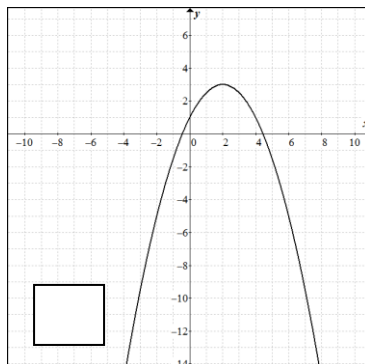
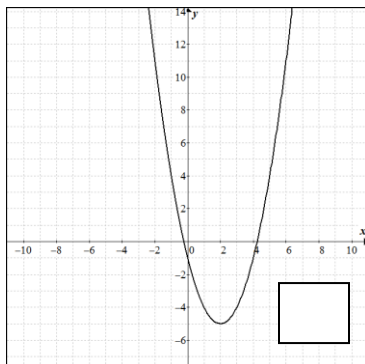
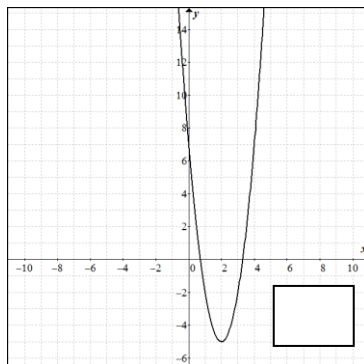
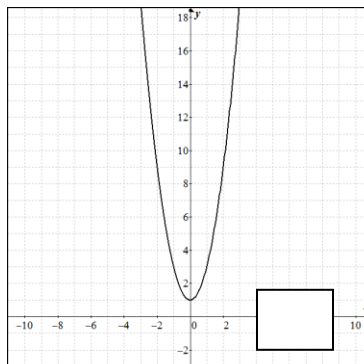
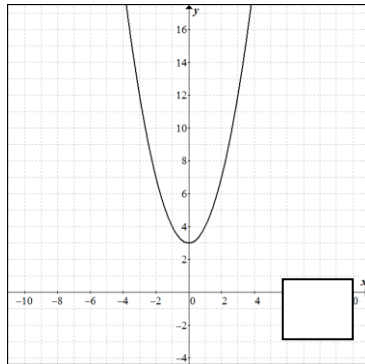
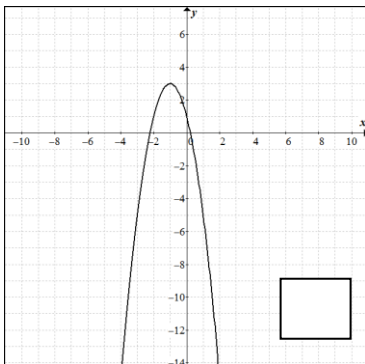
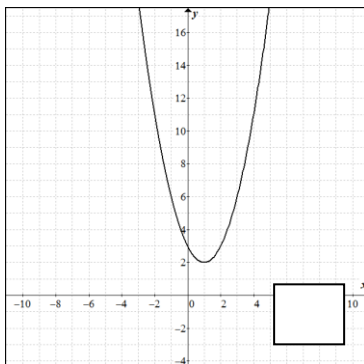
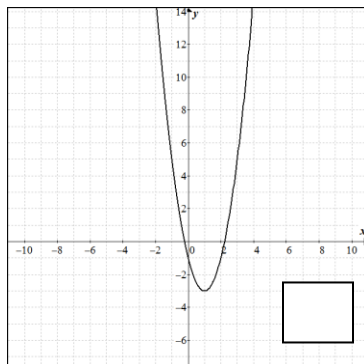
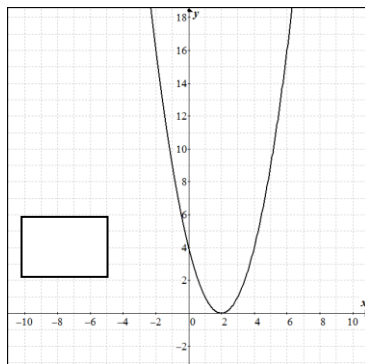
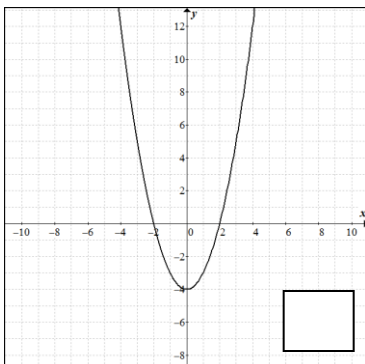
h) $y = 2 - x^2$

i) $y = x^2 - 4$

j) $y = 2x^2 + 1$

k) $y = (x - 2)^2$

l) $y = 3(x - 2)^2 - 5$



Date:

2) Graph each of the following using the key features. (Don't forget to label!!!)

a) $y = x^2$

b) $y = (x + 3)^2 - 5$

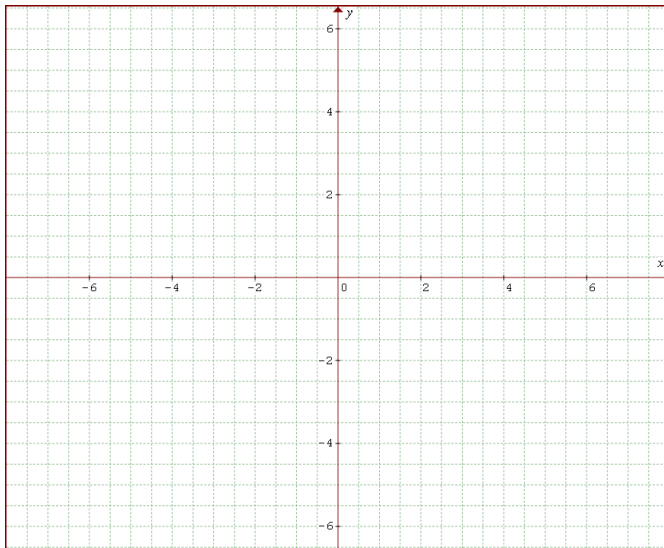
c) $y = -2(x + 6)^2 + 4$

d) $y = \frac{1}{2}(x - 3)^2 - 7$

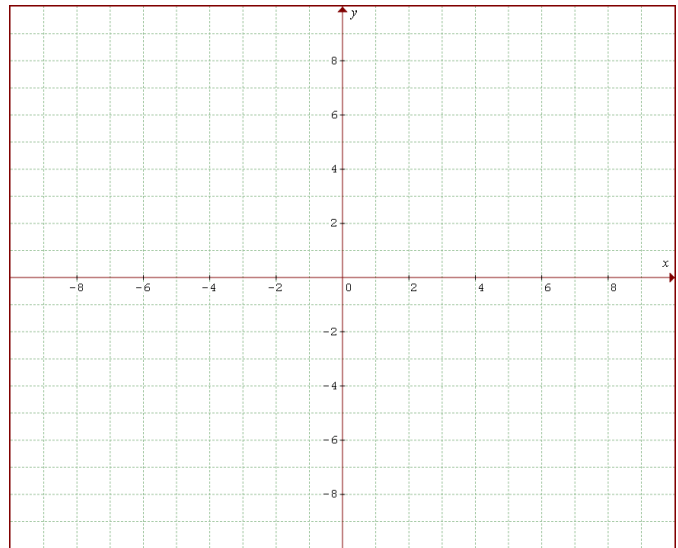
e) $y = -3(x - 6)^2 + 7$

f) $y = 2(x + 1)^2 - 6$

a - c



d - f



Answers

- 1)
 i k a f
 d c j l
 b e h g

2)

