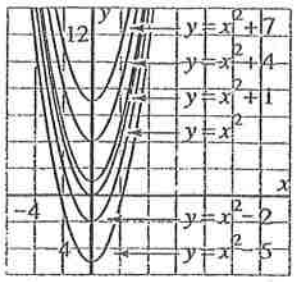
ANSWERS QUADRATIC FUNCTIONS 1

QUAD. FUNC. 2

1. a)



b) The vertex is on the y-axis. When q is positive, the vertex is q units above the x-axis. When q is negative, it is q units below the x-axis.

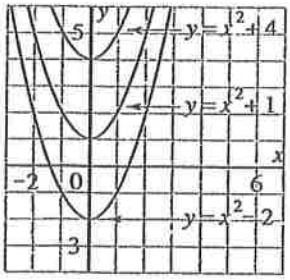
2. a) iii **b)** iv **c)** ii **d)** i

3. a) $y = x^2 + 5$ **b)** $y = x^2$ **c)** $y = x^2 - 2$ **d)** $y = x^2 - 6$

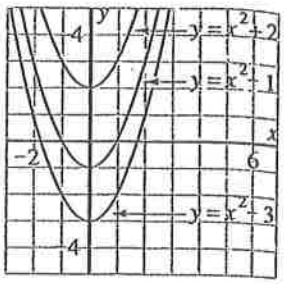
4. a) i) up ii) (0, 1) iii) 1
b) i) up ii) (0, −4) iii) −4 iv) ± 2
c) i) up ii) (0, 3) iii) 3
d) i) up ii) (0, −6) iii) −6 iv) ± 2.5

5. a) i) up ii) (0, 5) iii) 5
b) i) up ii) (0, −3) iii) −3 iv) ± 1.7
c) i) up ii) (0, 2) iii) 2
d) i) up ii) (0, 4) iii) 4

6. a)

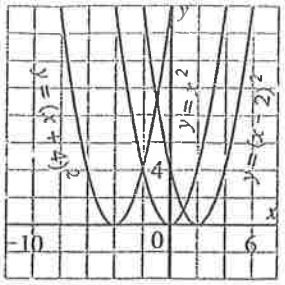


b)

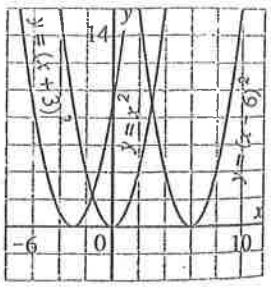


7. a) $y = x^2 + 2$ **b)** $y = x^2 - 9$
c) $y = x^2 + 5$

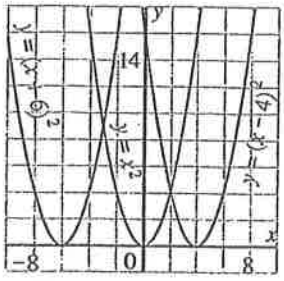
1. a)



b)



c)



2. a) When $p < 0$, the graph of $y = (x - p)^2$ is to the left of that of $y = x^2$.
b) When $p > 0$, the graph of $y = (x - p)^2$ is to the right of that of $y = x^2$.

3. a) iii **b)** i **c)** iv **d)** ii

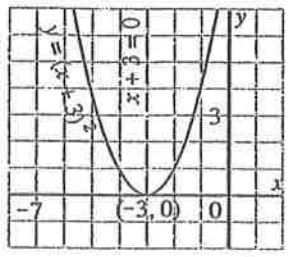
4. a) $y = (x + 2)^2$ **b)** $y = (x - 3)^2$
c) $y = (x + 4)^2$ **d)** $y = (x - 5)^2$

5. a) i) (−2,0) ii) $x + 2 = 0$ iii) up iv) 4
b) i) (−1,0) ii) $x + 1 = 0$ iii) up iv) 1
c) i) (3,0) ii) $x - 3 = 0$ iii) up iv) 9
d) i) (4,0) ii) $x - 4 = 0$ iii) up iv) 16

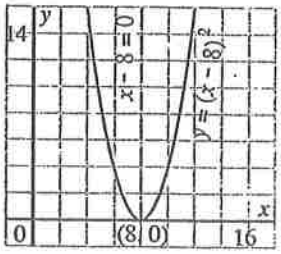
6. a) $y = (x + 2)^2$ **b)** $y = (x + 1)^2$
c) $y = (x - 3)^2$ **d)** $y = (x - 4)^2$

7. a) i) (−3,0) ii) $x + 3 = 0$ iii) up iv) 9
b) i) (8,0) ii) $x - 8 = 0$ iii) up iv) 64
c) i) (2,0) ii) $x - 2 = 0$ iii) up iv) 4
d) i) (−4,0) ii) $x + 4 = 0$ iii) up iv) 16

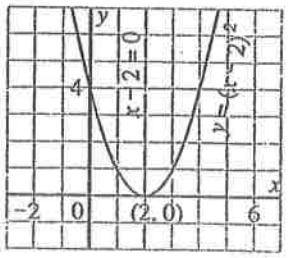
8. a)



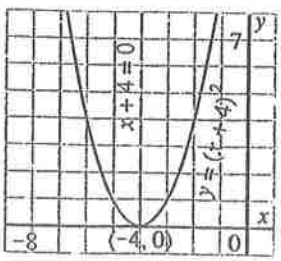
b)



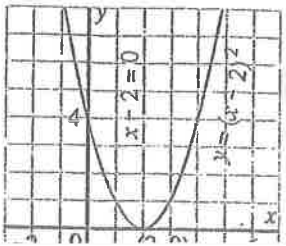
c)



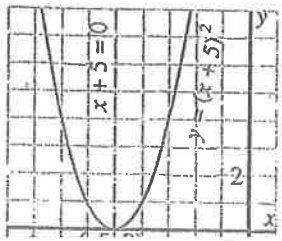
d)



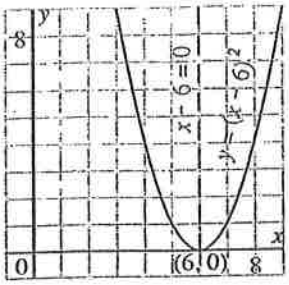
9. a)



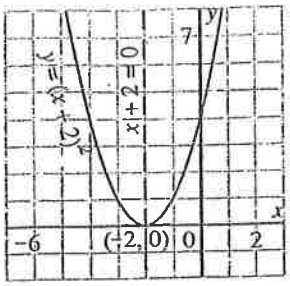
b)



c)

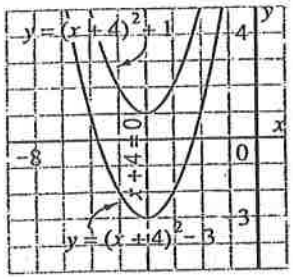


d)

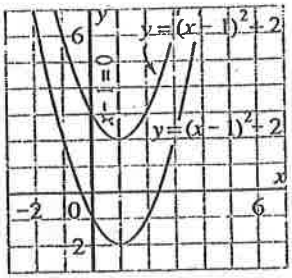


10. a) $y = (x - 4)^2$ b) $y = (x + 3)^2$
c) $y = (x - 7)^2$

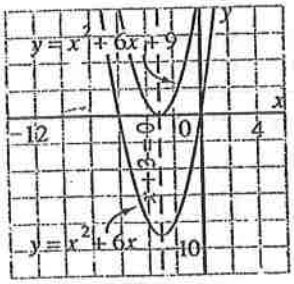
11. a)



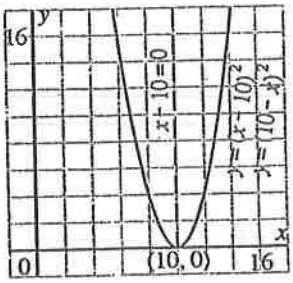
b)



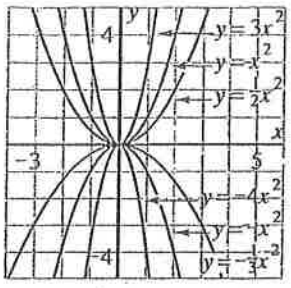
c)



d)



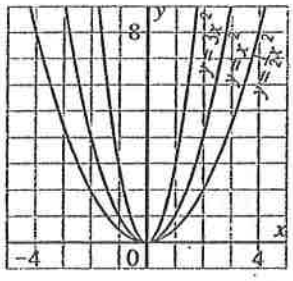
1. a)



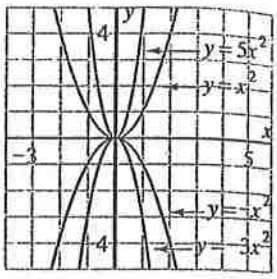
b) The parabola is expanded more: as a increases when $a > 0$; and as a decreases when $a < 0$.

2. a) iii b) ii c) i d) iv

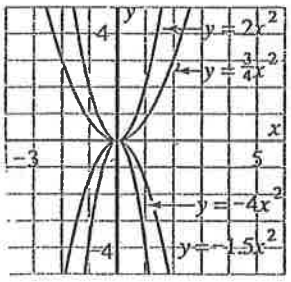
3. a)



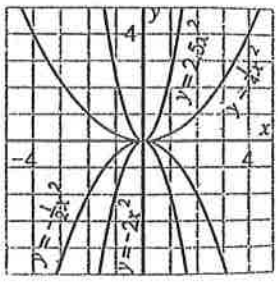
b)



c)



d)



4. a) $y = 2x^2$ b) $y = -x^2$ c) $y = -\frac{1}{4}x^2$
d) $y = 6x^2$

5. a) $y = -2.5x^2$ b) $y = \frac{5}{9}x^2$ c) $y = \frac{4}{27}x^2$
d) $y = -3x^2$

6. $y = \frac{3}{4}x^2$