

Completing the Square

1. Write the following in the form $y = (x + p)^2 + q$

a. $y = x^2 + 8x + 5$

b. $y = x^2 + 10x + 5$

c. $y = x^2 - 10x + 5$

d. $y = x^2 - 12x - 5$

e. $y = x^2 + 24x - 12$

f. $y = x^2 - 8x - 10$

2. State the axis of symmetry and the turning point of the graphs in question 1.

3. Write the following in the form $y = (x + p)^2 + q$

a. $y = x^2 + 5x + 12$

b. $y = x^2 - 5x + 12$

c/ $y = x^2 + 3x - 5$

d. $y = x^2 - 3x - 5$

e. $y = x^2 + 9x - 7$

f. $y = x^2 - 11x + 1$

4. State the axis of symmetry and the turning point of the graphs in question 3.

5. Write the following in the form $y = a(x + p)^2 + q$

a. $y = 2x^2 + 8x + 1$

b. $y = 2x^2 + 12x + 1$

c. $y = 3x^2 + 12x + 1$

d. $y = 4x^2 + 4x + 13$

e. $y = 4x^2 - 8x - 7$

f. $y = 3x^2 - 18x - 8$

g. $y = -3x^2 + 12x - 1$

h. $y = -4x^2 + 16x - 9$

i. $y = 18x - 7 - 3x^2$

6. State the axis of symmetry and the turning point of the graphs in question 7.

7. Write the following in the form $y = a(x + p)^2 + q$

a. $y = 3x^2 + 9x + 8$

b. $y = 2x^2 + 10x + 9$

c. $y = 4x^2 + 20x - 12$

d. $y = -3x^2 - 9x + 8$

e. $y = -2x^2 + 10x - 1$

f. $y = 18x - 2x^2 - 5$

8. State the axis of symmetry and the turning point of the graphs in question 7.