Turning Points by Completing the Square *Fluency* ANSWERS

Write the coordinates of the turning point

1 $y = (x + 3)^2 - 5$ *(−3, −5)*

2 $y = (x - 2)^2 + 7$ *(2, 7)*

3 $y = (x + 1)^2$ *(−1, 0)*

4 $y = (x - 6)^2 - 1$ *(6, −1)*

5 $y = (x + 4)^2 + 3$ *(−4, 3)*

6 $y = (x - 5)^2 - 12$ *(5, −12)*

Find the coordinates of the turning point

7 $y = x^2 + 6x + 2$ *(−3, −7)*

8 $y = x^2 - 4x + 9$ *(2, 5)*

9 $y = x^2 + 10x$ *(−5, −25)*

10 $y = x^2 - 8x + 20$ *(4, 4)*

11 $y = x^2 + 2x - 7$ *(−1, −8)*

12 $y = x^2 - 12x + 30$ *(6, −6)*

Find the coordinates of the turning point

13 $y = x^2 + 3x + 1$ *(−1.5, −1.25)*

14 $y = x^2 - 5x + 4$ *(2.5, −2.25)*

15 $y = x^2 + x - 2$ *(−0.5, −2.25)*

16 $y = x^2 - 7x$ *(3.5, −12.25)*

17 $y = x^2 + 9x + 20$ *(−4.5, −0.25)*

18 $y = x^2 - 3x - 1$ *(1.5, −3.25)*

Find the coordinates of the turning point

19 $y = 2x^2 + 8x + 3$ *(−2, −5)*

20 $y = 3x^2 - 12x + 5$ *(2, −7)*

21 $y = 2x^2 - 4x - 1$ *(1, −3)*

22 $y = 4x^2 + 8x$ *(−1, −4)*

23 $y = 5x^2 - 20x + 7$ *(2, −13)*

24 $y = 2x^2 + 6x + 1$ *(−1.5, −3.5)*

Find the turning point. Write max if it is a maximum, min if it is a minimum.

25 $y = -x^2 + 6x - 2$ *(3, 7) max*

26 $y = 5 + 4x - x^2$ *(2, 9) max*

27 $y = -(x - 3)^2 + 8$ *(3, 8) max*

28 $y = 2x^2 - 8x + 1$ *(2, −7) min*

29 $y = 10 - 2x - x^2$ *(−1, 11) max*

30 $y = -2x^2 + 4x + 3$ *(1, 5) max*