

Worksheet

08/08/2020

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Problem quickname: 9004

1)

Determine the vertex of the quadratic function. In order to do this, complete the square.

- a) Function: $x^2 + 8x + 7$
Complete the square: $\square x^2 + \square x + \square - \square + \square$
Form square: $\square (x + \square)^2 - \square + \square$
Convert to vertex form: $\square (x + \square)^2 - \square$
Vertex: $(\square | \square)$
- b) Function: $x^2 + 18x + 89$
Complete the square: $\square x^2 + \square x + \square - \square + \square$
Form square: $\square (x + \square)^2 - \square + \square$
Convert to vertex form: $\square (x + \square)^2 + \square$
Vertex: $(\square | \square)$
- c) Function: $x^2 + 2x - 3$
Complete the square: $\square x^2 + \square x + \square - \square - \square$
Form square: $\square (x + \square)^2 - \square - \square$
Convert to vertex form: $\square (x + \square)^2 - \square$
Vertex: $(\square | \square)$

2)

Determine the vertex of the quadratic function. In order to do this, complete the square.

- a) Function: $5x^2 - 80x + 312$ b) Function: $9x^2 + 108x + 320$
c) Function: $7x^2 - 126x + 574$ d) Function: $2x^2 + 32x + 118$
e) Function: $8x^2 + 16x + 6$ f) Function: $5x^2 + 40x + 89$

3)

Determine the vertex of the quadratic function.

- a) Function: $7x^2 + 84x + 248$
Factor out the leading coefficient 7: $\square (x^2 + \square x) + \square$
Complete the square: $\square (x^2 + \square x + \square - \square) + \square$
Form square: $\square ((x + \square)^2 - \square) + \square$
Multiply out: $\square (x + \square)^2 - \square + \square$
Convert to vertex form: $\square (x + \square)^2 - \square$
Vertex: $(\square | \square)$

- b) Function: $2x^2 + 16x + 34$
 Factor out the leading coefficient 2: $2(x^2 + \square x) + \square$
 Complete the square: $2(x^2 + \square x + \square - \square) + \square$
 Form square: $2((x + \square)^2 - \square) + \square$
 Multiply out: $2(x + \square)^2 - \square + \square$
 Convert to vertex form: $2(x + \square)^2 + \square$
 Vertex: $(\square | \square)$
- c) Function: $5x^2 + 60x + 178$
 Factor out the leading coefficient 5: $5(x^2 + \square x) + \square$
 Complete the square: $5(x^2 + \square x + \square - \square) + \square$
 Form square: $5((x + \square)^2 - \square) + \square$
 Multiply out: $5(x + \square)^2 - \square + \square$
 Convert to vertex form: $5(x + \square)^2 - \square$
 Vertex: $(\square | \square)$
- d) Function: $8x^2 + 80x + 199$
 Factor out the leading coefficient 8: $8(x^2 + \square x) + \square$
 Complete the square: $8(x^2 + \square x + \square - \square) + \square$
 Form square: $8((x + \square)^2 - \square) + \square$
 Multiply out: $8(x + \square)^2 - \square + \square$
 Convert to vertex form: $8(x + \square)^2 - \square$
 Vertex: $(\square | \square)$
- e) Function: $7x^2 + 42x + 71$
 Factor out the leading coefficient 7: $7(x^2 + \square x) + \square$
 Complete the square: $7(x^2 + \square x + \square - \square) + \square$
 Form square: $7((x + \square)^2 - \square) + \square$
 Multiply out: $7(x + \square)^2 - \square + \square$
 Convert to vertex form: $7(x + \square)^2 + \square$
 Vertex: $(\square | \square)$
- f) Function: $9x^2 + 72x + 147$
 Factor out the leading coefficient 9: $9(x^2 + \square x) + \square$
 Complete the square: $9(x^2 + \square x + \square - \square) + \square$
 Form square: $9((x + \square)^2 - \square) + \square$
 Multiply out: $9(x + \square)^2 - \square + \square$
 Convert to vertex form: $9(x + \square)^2 + \square$
 Vertex: $(\square | \square)$

4)

Determine the vertex of the quadratic function. In order to do this, complete the square.

- a) Function: $x^2 - 10x + 18$, Vertex: b) Function: $x^2 - 4x - 2$, Vertex:
 c) Function: $x^2 + 18x + 83$, Vertex: d) Function: $x^2 + 14x + 41$, Vertex:
 e) Function: $x^2 - 6x + 15$, Vertex: f) Function: $x^2 + 20x + 108$, Vertex:

Good Luck!