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: $x^2 - 2x + 4$
b) Function: $x^2 - 16x + 70$
c) Function: $x^2 - 8x + 19$
d) Function: $x^2 - 6x + 1$
e) Function: $x^2 - 2x$
f) Function: $x^2 - 8x + 20$

2)

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

a) Function: $x^2 + 4x - 3$
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: $(\square | \square)$

b) Function: $x^2 - 2x - 1$
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: $x^2 + 16x + 57$
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: $(\square | \square)$

3)

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

a) Function: $2x^2 + 24x + 78$
b) Function: $9x^2 + 72x + 141$
c) Function: $10x^2 + 140x + 485$
d) Function: $5x^2 - 80x + 313$
e) Function: $4x^2 + 72x + 326$
f) Function: $10x^2 - 80x + 154$

4)

Determine the vertex of the quadratic function.

a) Function: $10x^2 - 120x + 352$

Factor out the leading coefficient 10: $\square(x^2 - \square x) + \square$

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: $6x^2 + 96x + 376$

Factor out the leading coefficient 6: $\square(x^2 + \square x) + \square$

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: $(\square|\square)$

c) Function: $8x^2 + 144x + 642$

Factor out the leading coefficient 8: $\square(x^2 + \square x) + \square$

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: $(\square|\square)$

d) Function: $9x^2 + 90x + 216$

Factor out the leading coefficient 9: $\square(x^2 + \square x) + \square$

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: $(\square|\square)$

e) Function: $7x^2 - 140x + 710$

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: $(\square|\square)$

f) Function: $7x^2 + 42x + 70$

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: $(\square|\square)$

Good Luck!