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: $7x^2 - 126x + 574$

b) Function: $2x^2 + 20x + 47$

c) Function: $3x^2 - 60x + 308$

d) Function: $3x^2 + 24x + 42$

e) Function: $8x^2 + 96x + 285$

f) Function: $5x^2 + 70x + 253$

2)

Determine the vertex of the quadratic function.

a) Function: $4x^2 + 80x + 394$

Factor out the leading coefficient 4: $\square(x^2 + \square x) + \square$

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: $9x^2 - 54x + 85$

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: $(\square|\square)$

c) Function: $5x^2 - 90x + 414$

Factor out the leading coefficient 5: $\square(x^2 - \square x) + \square$

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: $8x^2 + 128x + 511$
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: $(\square|\square)$

e) Function: $4x^2 + 32x + 62$
Factor out the leading coefficient 4: $\square(x^2 + \square x) + \square$
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: $10x^2 - 120x + 351$
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: $(\square|\square)$

3)

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

a) Function: $x^2 + 8x + 14$, Vertex:
b) Function: $x^2 + 6x + 3$, Vertex:
c) Function: $x^2 + 4x + 11$, Vertex:
d) Function: $x^2 + 12x + 30$, Vertex:
e) Function: $x^2 + 16x + 60$, Vertex:
f) Function: $x^2 + 8x + 22$, Vertex:

4)

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

a) Function: $x^2 + 4x - 2$
b) Function: $x^2 + 14x + 46$
c) Function: $x^2 + 4x + 6$
d) Function: $x^2 + 6x$
e) Function: $x^2 + 20x + 96$
f) Function: $x^2 + 6x - 1$

Good Luck!