Which quadratic function graphed below has a vertex at \((3, -2)\)?

1. A function is shown below.

A company that makes shoelaces found that when each pair sells for \(p\) dollars, the total profit will be \(R(p)\). This is modeled by the function \(R(p) = -p^2 + 4p - 3\), the graph of which is shown below.

What is the vertex of the function?

A. \(\left(\frac{3}{2}, -6\right)\)

B. \((0, -4)\)

C. \((-1, 0)\)

D. \((4, 0)\)

At which price will the company make the greatest profit?

A. $1.00

B. $1.40

C. $2.00

D. $3.00
Which graph best represents a quadratic function?

A.  
\[ \begin{array}{c}
\text{y} \\
\text{-4 -3 -2 -1 0 1 2 3 4} \\
\text{x} \\
\end{array} \]

B.  
\[ \begin{array}{c}
\text{y} \\
\text{-4 -3 -2 -1 0 1 2 3 4} \\
\text{x} \\
\end{array} \]

C.  
\[ \begin{array}{c}
\text{y} \\
\text{-4 -3 -2 -1 0 1 2 3 4} \\
\text{x} \\
\end{array} \]

D.  
\[ \begin{array}{c}
\text{y} \\
\text{-4 -3 -2 -1 0 1 2 3 4} \\
\text{x} \\
\end{array} \]

4.

What is the factored form of the expression below?

\[ x^2 - 5x - 24 \]

6.

A parabola \[ \underline{\text{always}} \] has an axis of symmetry.

a. always  
b. sometimes  
c. never

A.  \((x + 8)(x - 3)\)
B.  \((x - 6)(x + 4)\)
C.  \((x + 6)(x - 4)\)
D.  \((x - 8)(x + 3)\)
Identify the vertex of the graph. Tell whether it is a minimum or maximum.

1. \( y = x^2 - 8x + 15 \)

Axis of Symmetry: ____________
Vertex: ____________
Domain: ____________
Range: ____________

9. \( y = -2x^2 + 8x - 10 \)

Axis of Symmetry: ____________
Vertex: ____________
Domain: ____________
Range: ____________
Determine the following information and sketch the graph of the given function. (10)

\[ y = 2x^2 + 8x + 9 \]

Direction of Opening: ________________

Equation of the Axis of Symmetry: __________

Vertex: ________

Maximum or Minimum Value: _________

Number of x-intercepts: ________

Y-Intercept: __________

Domain: _______________

Range: _______________

10.
Factoring Trinomials (a = 1)

Factor each completely.

1) $b^2 + 8b + 7$

2) $n^2 - 11n + 10$

3) $m^2 + m - 90$

4) $n^2 + 4n - 12$

5) $n^2 - 10n + 9$

6) $b^2 + 16b + 64$

7) $m^2 + 2m - 24$

8) $x^2 - 4x + 24$

9) $k^2 - 13k + 40$

10) $a^2 + 11a + 18$

11) $n^2 - n - 56$

12) $n^2 - 5n + 6$