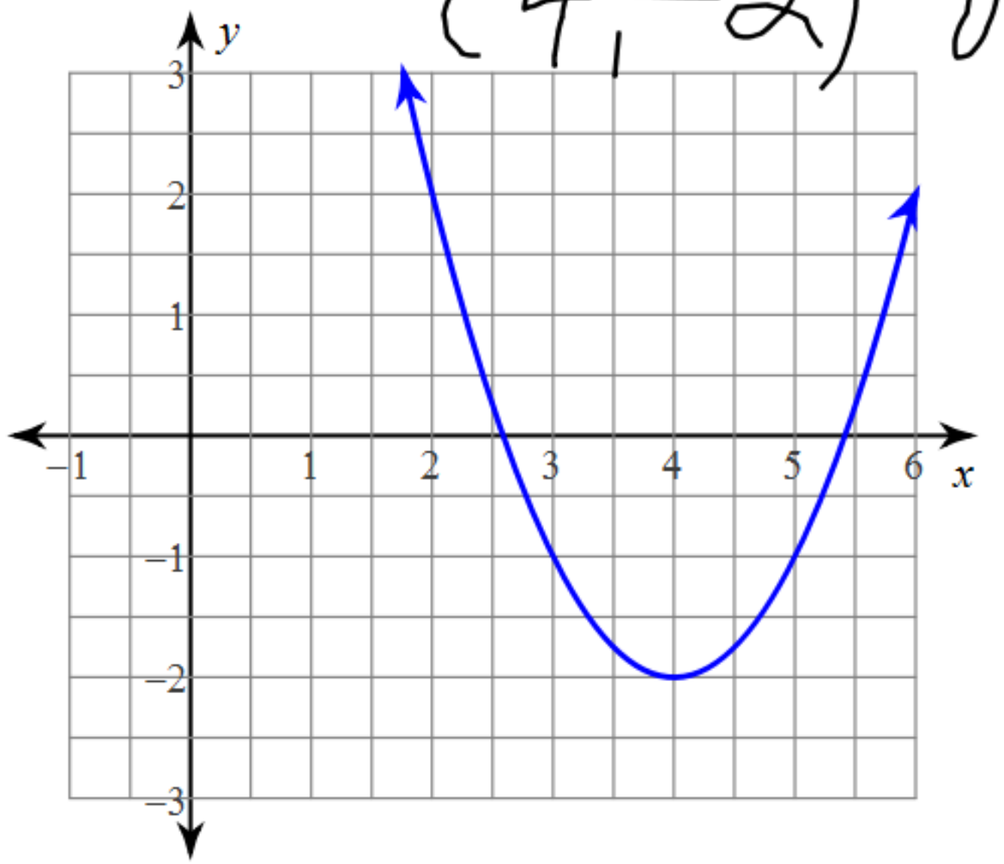
Use the information provided to write the vertex form equation of each parabola.

7)



vertex $(4, -2)$

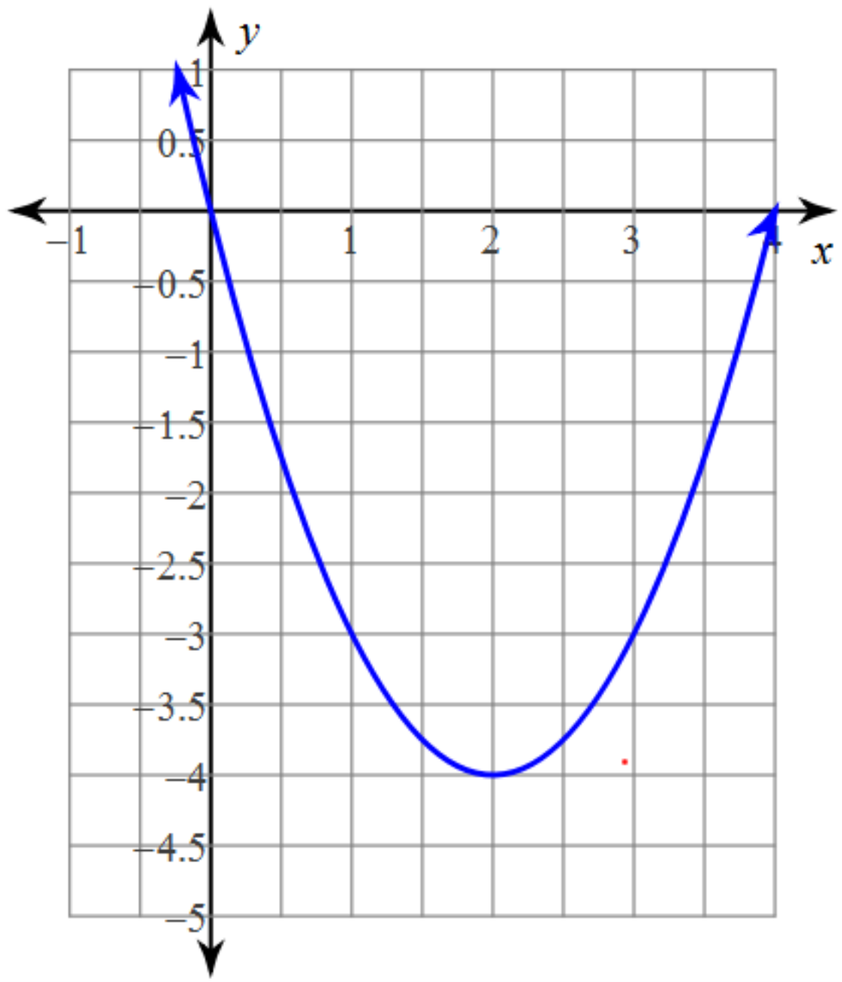
$y = a(x - h)^2 + k$

$y = a(x - 4)^2 - 2$

$y = (x - 4)^2 - 2$

Use the information provided to write the vertex form equation of each parabola.

8)



vertex (a, −4)

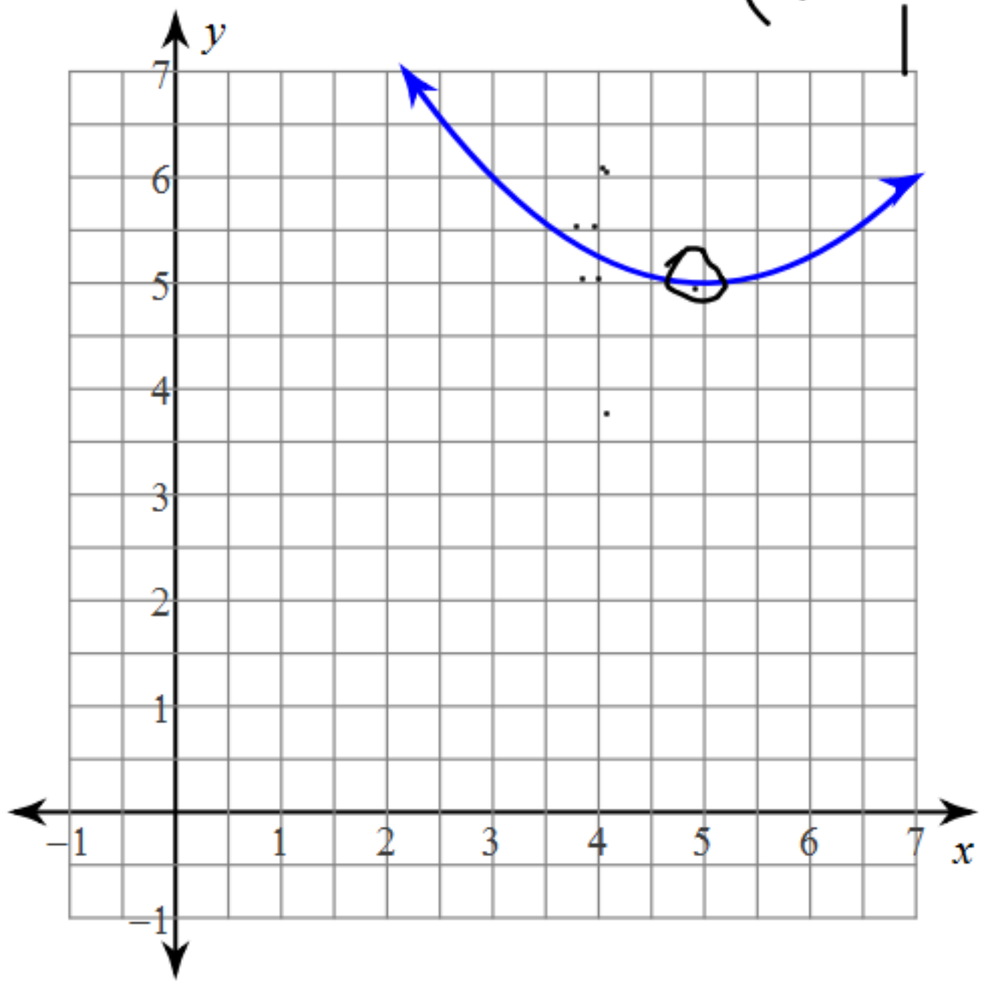
$y = a(x-h)^2 + k$

$y = 1(x-2)^2 - 4$

It's going up.

Use the information provided to write the vertex form equation of each parabola.

9)



(5, 5)

$y = a(x-h)^2 + k$

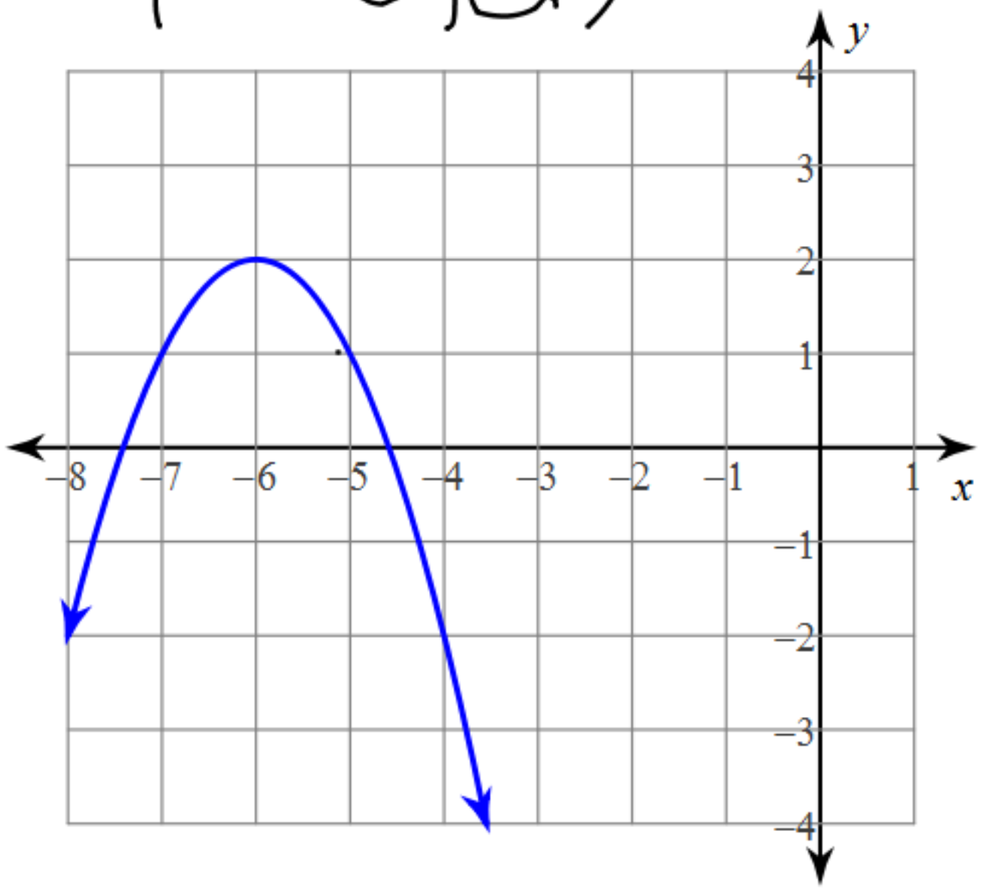
$y = \frac{1}{4}(x-5)^2 + 5$

goes up!

1

Use the information provided to write the vertex form equation of each parabola.

10) (−6, 2)



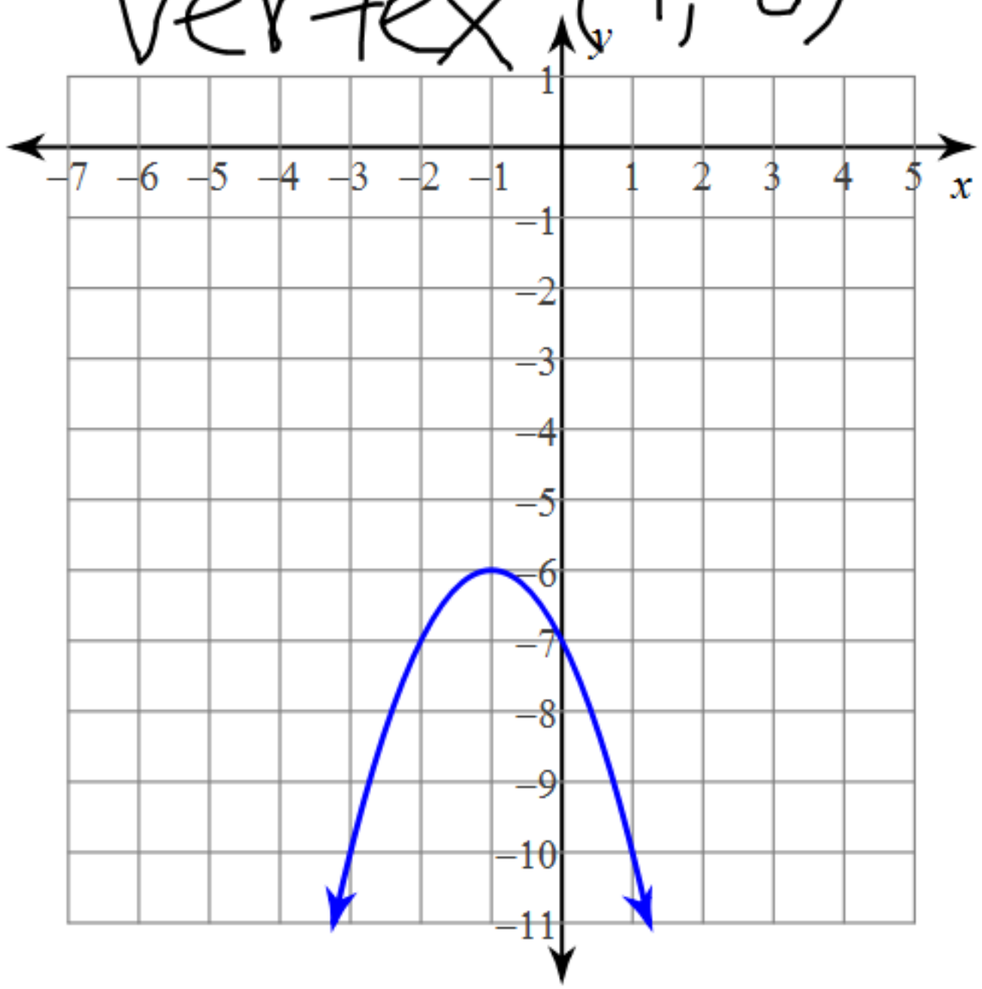
$y = a(x-h)^2 + k$

$y = -1(x+6)^2 + 2$

down

Use the information provided to write the vertex form equation of each parabola.

11) vertex $(-1,-6)$



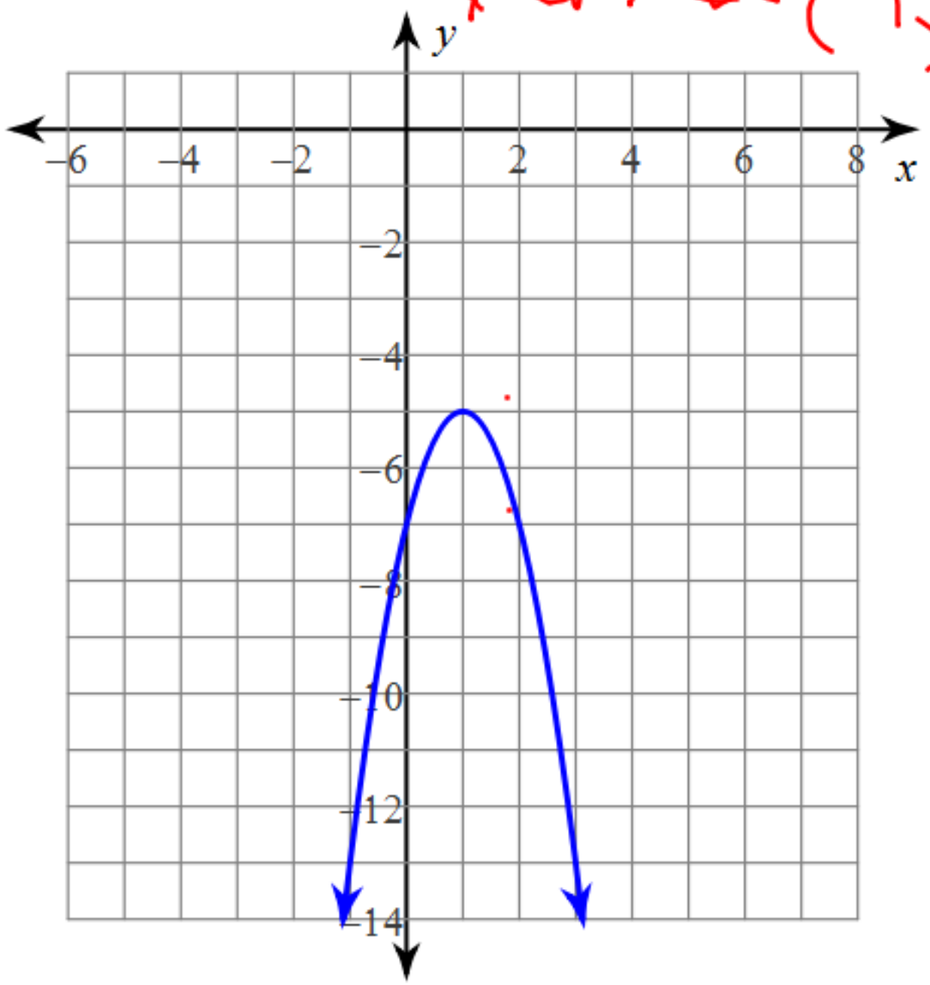
$y = a(x-h)^2+K$

$y = -(x+1)^2-6$

down

Use the information provided to write the vertex form equation of each parabola.

12)



vertex $(1, -5)$

$y = a(x-h)^2 + k$

$y = a(x-1)^2 - 5$

$y = -(x-1)^2 - 5$

$y = -2(x-1)^2 - 5$

Name: _____ Date: _____

Section 8.5

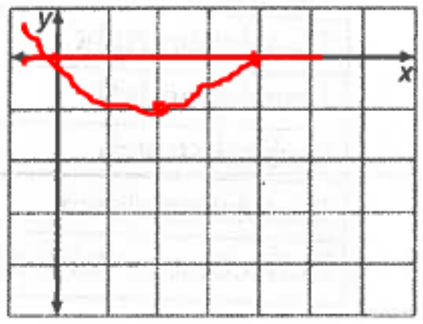
4. Complete this equation for the quadratic function with a graph that
- is three times as narrow as the graph of $y = x^2$
- has a vertex at (6, 4)
- opens downward

$y = \_3\_(x \_-6\_)^2 \_+4$

vertex (2, −1)

5. Seen from above, an Everbright 400 bow window has a parabolic shape. The function that models this shape is $y = 0.25(x - 2)^2 - 1$, where x is the distance from the left side of the window and y is the distance out from the wall. All measurements are in metres.

a) Sketch a graph of the quadratic function.
- Mark a point at (0, 0).
- Mark a point at the vertex.
- Use the symmetry of a parabola to locate a second point on the x- axis.
- Join these three points with a smooth parabolic curve.



(4, 0)

b) What is the maximum distance that the window sticks out from the wall?

1 m

Hint
A parabola has a maximum or minimum at its vertex.

c) How wide is the window?

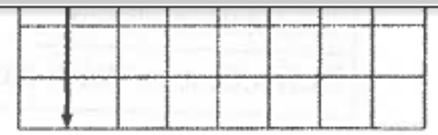
4m

6. The cross section of this designer umbrella can be modelled by the quadratic function $y = -\frac{1}{27}(x - 45)^2 + 75$, where x is the distance in from the edge of the umbrella cover and y is the distance up from its base. These distances are in centimetres.

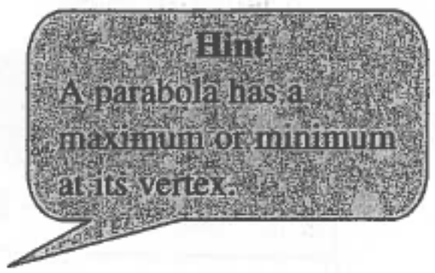
a) Mark the co-ordinates of points A, B, and C on the diagram.

b) How wide is the umbrella at its base?

- Use the symmetry of a parabola to locate a second point on the x- axis.
- Join these three points with a smooth parabolic curve.



b) What is the maximum distance that the window sticks out from the wall?

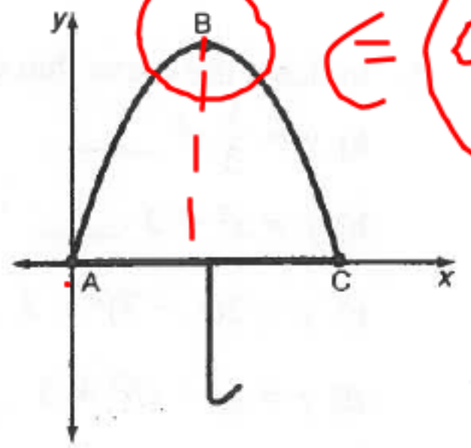


c) How wide is the window?

6. The cross section of this designer umbrella can be modelled by the quadratic function $y = -\frac{1}{27}(x - 45)^2 + 75$, where x is the distance in from the edge of the umbrella cover and y is the distance up from its base. These distances are in centimetres.

a) Mark the co-ordinates of points A, B, and C on the diagram.

A = (0,0)
B = (45,75)
C = (90,0)



b) How wide is the umbrella at its base?

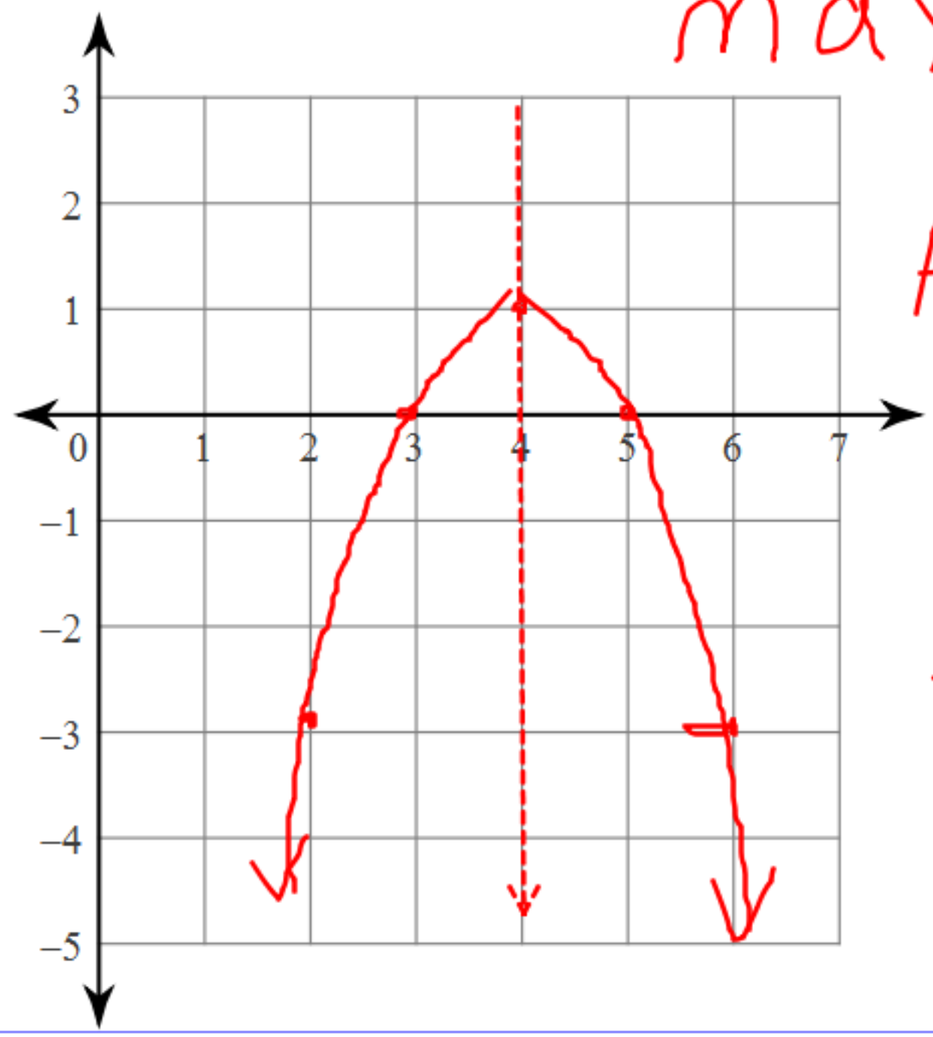
90 cm

c) How tall is the umbrella (not counting the handle)?

75 cm

Sketch the graph of each function.

1) $y = -(x-4)^2 + 1$



vertex (4, 1)

max ∩

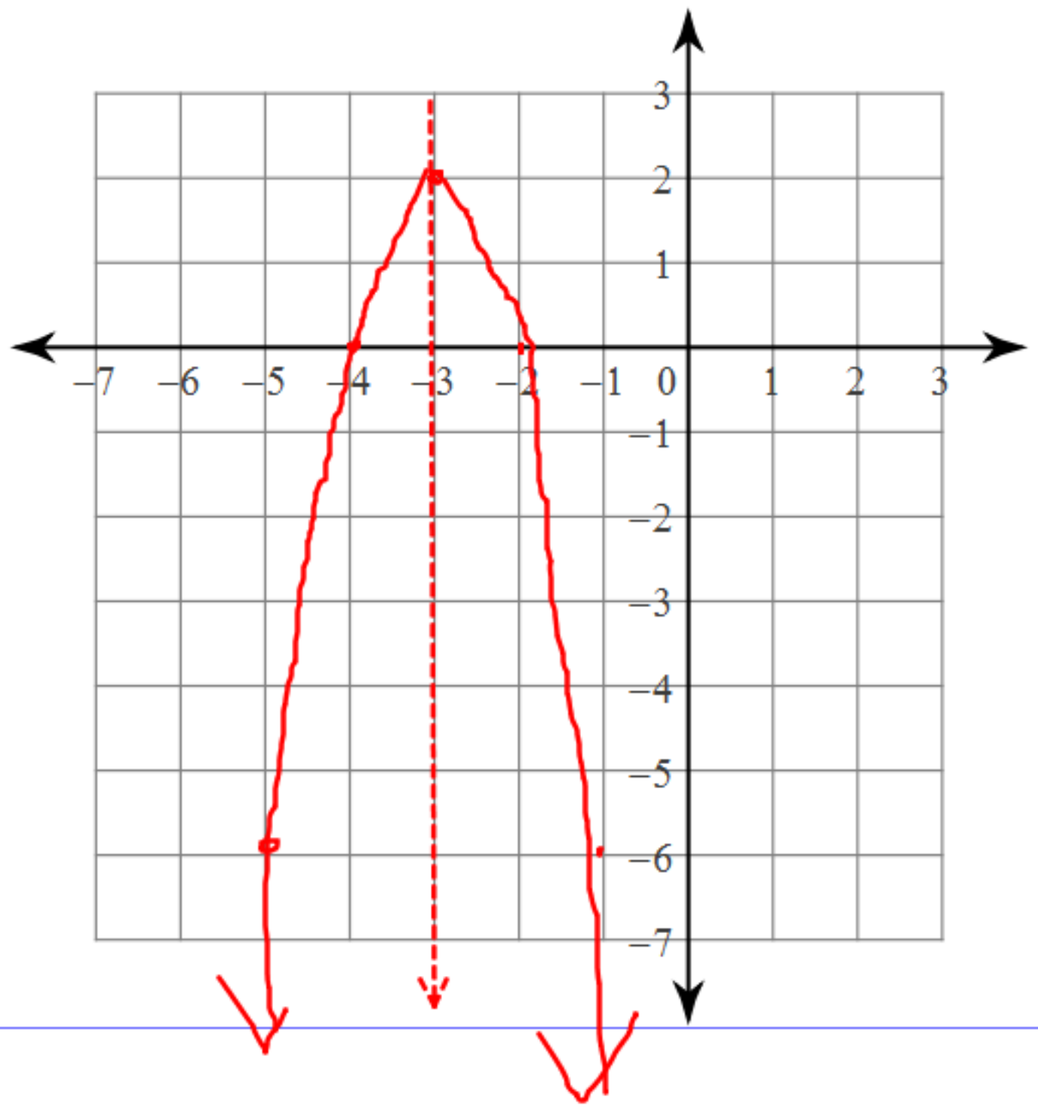
Axis of Symmetry

A of S $x = 4$

zeroes $\{3, 5\}$

Sketch the graph of each function.

2) $y = -2(x + 3)^2 + 2$



vertex (-3, 2)

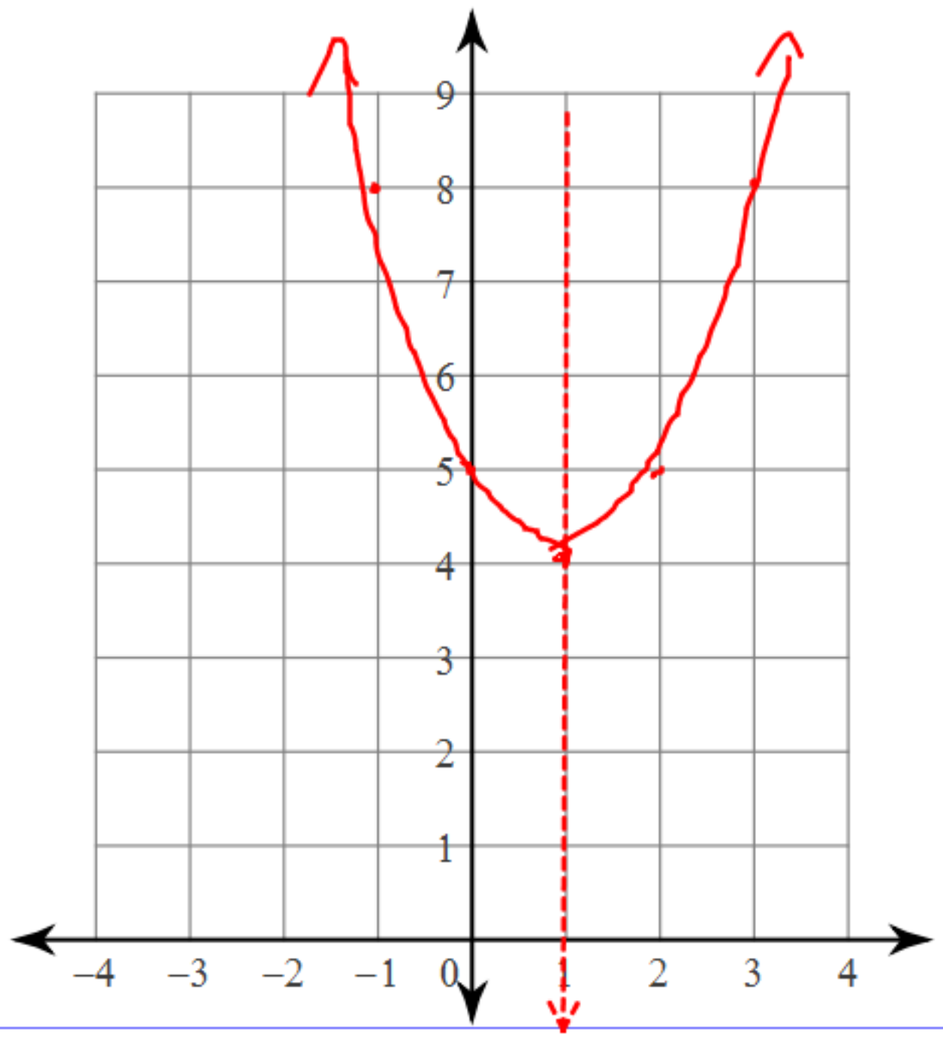
A of S $x = -3$

max ∩

zeroes {-4, -2}

Sketch the graph of each function.

3) $y = (x-1)^2 + 4$



vertex (1, 4)

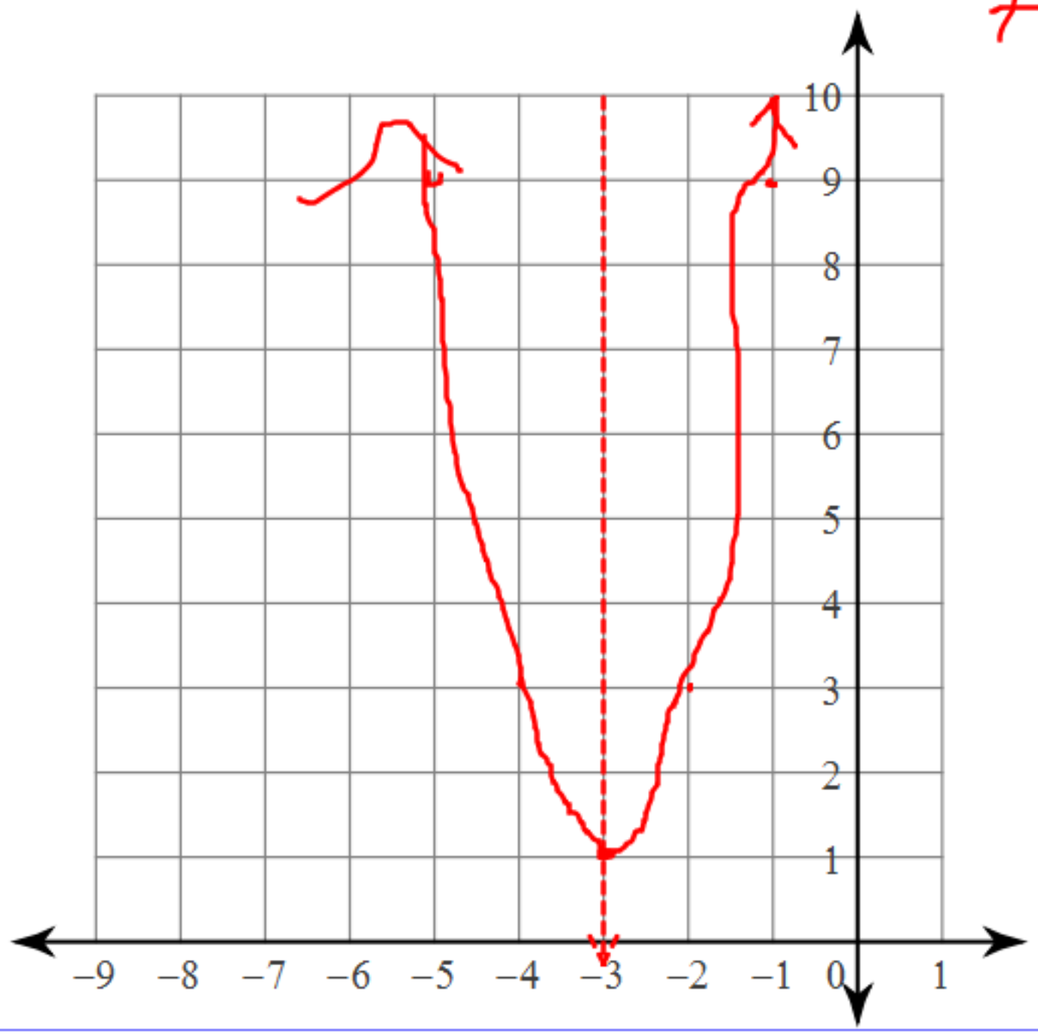
min ∪

A of S x = 1

zeroes = none

Sketch the graph of each function.

4) $y = 2(x+3)^2 + 1$



vertex = (−3, 1)

AofS = x ≤ −3

min 0

zeroes = { }