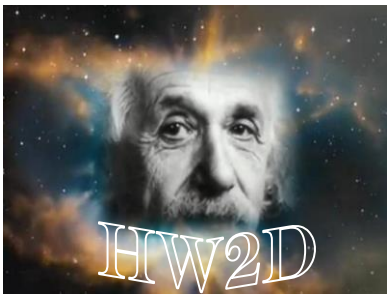


State whether the quadratic function has a maximum or minimum. Then, find the value of ***x*** at which the max or min occurs.

1) $f(x) = (x - 1)(x - 7)$

2) $g(x) = 8 - (x - 2)^2$

3) $h(x) = 2x^2 - 6x + 9$

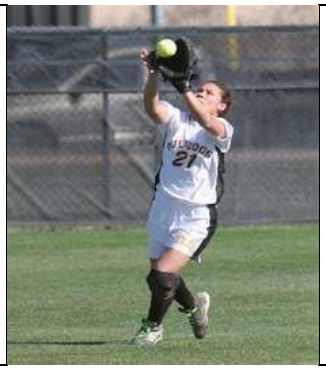
4) $j(x) = 1 - 4x - 3x^2$

5) A farmer wants to make a rectangular enclosure using a wall as one side and 120 yards of fencing for the other three sides.

a) Write a function to express the area, and state its domain.
b) Find the value of ***x*** that gives the greatest area.

6) A rectangle has perimeter of 80cm. If its width is ***x***, express its length and its area in terms of ***x***. What is the maximum area of the rectangle?

7) Suppose you have 102 meters of fence to make two side-by-side rectangular enclosures. The fence will span the outer edges of both rectangles, but will also serve as a barrier between the two as well. What is the maximum area you can achieve for both enclosures?



8) If ball is thrown vertically upward at 30m/s, then its approximate height in meters ***t*** seconds later is given by the function: $h(t) = 30t - 5t^2$.

a) After how many seconds does the ball hit the ground?
b) What is the domain of $h(t)$?
c) How high does the ball go?

1) min; x = 4
2) max; x = 2
3) min; x = 3/2
4) max; x = -2/3

5a) $A(x) = x(120 - 2x)$
domain: $0 < x < 60$
5b) 30yds^2
6) length: $40 - x$
$A(x) = x(40 - x)$
max area: 400cm^2

7) 433.5m^2
8a) 6 seconds
8b) $0 \leq x \leq 6$
8c) 45m