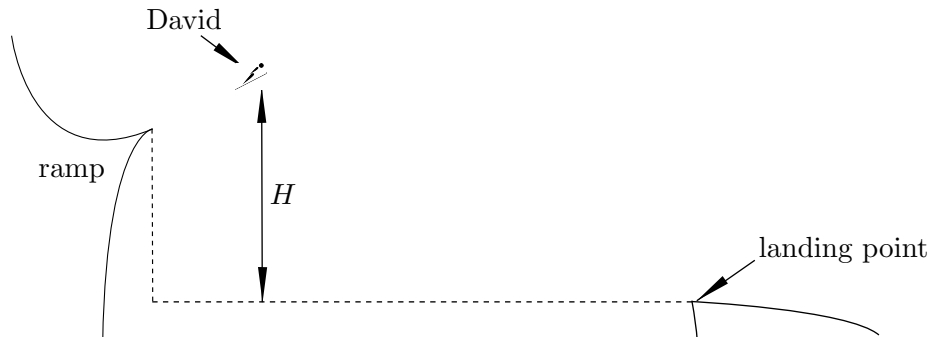


4. [16 points] David is a professional extreme athlete. In one of his stunts, he jumps off a ski ramp. David's height H (in m) above his landing point, from the moment he leaves the ramp until he lands, is given by the function

$$H = f(t) = -5t^2 + 8t + 15.$$

In this formula, t is the time (in seconds) after David leaves the ramp.



- a. [3 points] Find the exact time it took David to travel from the ramp to his landing point? Include units.

Answer: _____

- b. [5 points] Use the method of completing the square to write the formula for $f(t)$ in vertex form. Carefully show your algebraic work step-by-step.

$f(t) =$ _____

We rewrote the problem in this page for your convenience

David is a professional extreme athlete. In one of his stunts, he ski jumps off a ski ramp. David's height H (in m) above his landing point, from the moment he leaves the ramp until he lands, is given by the function

$$H = f(t) = -5t^2 + 8t + 15.$$

In this formula, t is the time (in seconds) after David leaves the ramp.

- c. [2 points] What is the exact value of David's maximum height above his landing point during his jump? Include units.

Answer: _____

- d. [2 points] How high is the ramp above his landing point? Include units.

Answer: _____

- e. [4 points] What is the domain and range of $H = f(t)$ in the context of this problem? Express your answer using inequalities or interval notation. Your answer has to be exact.

Domain: _____ Range : _____