▷. Below is a variant Exercise 1.1.6 from the book (page 13 or 14).

Thm. **Theorem 6**. Let $a, b, c \in \mathbb{R}$. If the function $f : \mathbb{R} \to \mathbb{R}$ is a quadratic function of the form

$$f(x) = ax^2 + bx + c$$

and $a < 0$, then the function f has a maximum value when $x = \dfrac{-b}{2a}$.

Rmk. Theorem 6 can be proven using calculus or precalculus mathematics.

▶. **ER 1.1.6** Using **only** Theorem 6, what can be concluded about each function given below?

- Parts (a) – (f) are in book. Some have stars (i.e., answers/hints in back of book)

(1) $g(x) = -5x^2 + 7x$

. . . . . .

Optional Thinking Land Space

Solution

▷. Below is a variant Exercise 1.1.6 from the book (page 13 or 14).

Thm. **Theorem 6**. Let $a, b, c \in \mathbb{R}$. If the function $f: \mathbb{R} \to \mathbb{R}$ is a quadratic function of the form

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▶. **ER 1.1.6** Using **only** Theorem 6, what can be concluded about each function given below?

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(2) $h(x) = x^2 + 3x - 4$

. . . . . .

Optional Thinking Land Space

Solution