PRACTICE PROBLEMS

PARK, BAE JUN

Quadratic equations

Math114 Section 307 & 309

(1) Let $f(x) = x^2 + 6x + 11$. Determine the following (if none, write “none”).
   (a) Complete the square.

   (b) Vertex

   (c) Find the Maximum and Minimum.
(d) $x$-intercept and $y$-intercept

Intervals over which $f$ is (e) increasing and (f) decreasing.
(2) Let \( f(x) = -2x^2 + 12x - 16 \). Determine the following (if none, write “none”).

(a) Complete the square.

(b) Vertex

(c) Find the Maximum and Minimum.

(d) \( x \)-intercept and \( y \)-intercept

Intervals over which \( f \) is (e) increasing and (f) decreasing.
(3) Let $f(x) = -2x^2 - 12x - 11$. Determine the following (if none, write “none”).
(a) Complete the square.

(b) Vertex

(c) Find the Maximum and Minimum.

(d) $x$-intercept and $y$-intercept

Intervals over which $f$ is (e) increasing and (f) decreasing.
(4) Let \( f(x) = x^2 - 2x - 8 \). Determine the following (if none, write “none”).

(a) Complete the square.

(b) Vertex

(c) Find the Maximum and Minimum.

(d) \( x \)-intercept and \( y \)-intercept

Intervals over which \( f \) is (e) increasing and (f) decreasing.
(5) Let \( f(x) = -3x^2 + 5x - 1 \). Determine the following (if none, write “none”).

(a) Complete the square.

(b) Vertex

c) Find the Maximum and Minimum.

d) \( x \)-intercept and \( y \)-intercept

Intervals over which \( f \) is (e) increasing and (f) decreasing.
(6) Let \( f(x) = 3x^2 + 4x - 5 \) and \( g(x) = x^2 - 4x - 1 \). Find the minimum value of \( f(x) - g(x) \).