[07-08-30-T11]

Analysis of functions

■ A

[1] Suppose $y = 3x + 5$. Is y a function of x? Prove that your answer is correct.

[2] Suppose $y = x^2 - x - 6$. Is y a function of x? Prove that your answer is correct.

[3] Suppose $y^2 = x$. Is y a function of x? Prove that your answer is correct.

■ B

[1] Suppose $f(x) = \frac{1}{x}$. Is f and even or an odd function or neither? Prove that your answer is correct.

[2] Suppose $f(x) = x^2 - 6$. Is f and even or an odd function or neither? Prove that your answer is correct.

[3] Suppose $f(x) = x^2 + 2x + 2$. Is f and even or an odd function or neither? Prove that your answer is correct.

■ C

[1] Suppose $f(x) = 3x + 4$. Is f symmetric with respect to the line $y = x$? Prove that your answer is correct.

[2] Suppose $f(x) = 2x^2 + 4x - 1$.

[a] What is the domain of f ?

[b] What is the range of f ?

[c] If f obtains a maximum or minimum value, state which and write the point ?

[d] If f has a line of symmetry, state that line ?

[e] Where on its domain is f and increasing (decreasing) function of x ? Prove that you answer is correct.