

5.15 1)

Είναι

$$\left. \begin{aligned} \lim_{x \rightarrow 1} (3x - 1) &= 3 \cdot 1 - 1 = 2 \\ \lim_{x \rightarrow 1} (x^2 + x) &= 1^2 + 1 = 2 \\ 3x - 1 &\leq f(x) \leq x^2 + x \end{aligned} \right\} \begin{array}{l} \text{κριτήριο παρεμβολής} \\ \Rightarrow \end{array} \boxed{\lim_{x \rightarrow 1} f(x) = 2}$$

5.15 2)

Είναι

$$\left. \begin{aligned} \lim_{x \rightarrow -2} (x - 3) &= -2 - 3 = -5 \\ \lim_{x \rightarrow -2} (x^2 + 5x + 1) &= (-2)^2 + 5 \cdot (-2) + 1 = -5 \\ x - 3 &\leq f(x) \leq x^2 + 5x + 1 \end{aligned} \right\} \begin{array}{l} \text{κριτήριο παρεμβολής} \\ \Rightarrow \end{array} \boxed{\lim_{x \rightarrow -2} f(x) = -5}$$

5.15 3)

Είναι

$$\left. \begin{aligned} \lim_{x \rightarrow -1} (x^2 + 2x + 2) &= (-1)^2 + 2(-1) + 2 = 1 \\ \lim_{x \rightarrow -1} (2x^2 + 4x + 3) &= 2 \cdot (-1)^2 + 4 \cdot (-1) + 3 = 1 \\ x^2 + 2x + 2 &\leq f(x) \leq 2x^2 + 4x + 3 \end{aligned} \right\} \begin{array}{l} \text{κριτήριο παρεμβολής} \\ \Rightarrow \end{array} \boxed{\lim_{x \rightarrow -1} f(x) = 1}$$

5.15 4)

Είναι

$$\left. \begin{aligned} \lim_{x \rightarrow 2} (2x^2 + 3x - 4) &= 2 \cdot 2^2 + 3 \cdot 2 - 4 = 10 \\ \lim_{x \rightarrow 2} (3x^2 - x) &= 3 \cdot 2^2 - 2 = 10 \\ 2x^2 + 3x - 4 &\leq f(x) \leq 3x^2 - x \end{aligned} \right\} \begin{array}{l} \text{κριτήριο παρεμβολής} \\ \Rightarrow \end{array} \boxed{\lim_{x \rightarrow 2} f(x) = 10}$$

5.15 5)

Είναι

$$\left. \begin{aligned} \lim_{x \rightarrow 3} (2x^2 + 2x - 7) &= 2 \cdot 3^2 + 2 \cdot 3 - 7 = 17 \\ \lim_{x \rightarrow 3} (3x^2 - 4x + 2) &= 3 \cdot 3^2 - 4 \cdot 3 + 2 = 17 \\ 2x^2 + 2x - 7 &\leq f(x) \leq 3x^2 - 4x + 2 \end{aligned} \right\} \begin{array}{l} \text{κριτήριο παρεμβολής} \\ \Rightarrow \end{array} \boxed{\lim_{x \rightarrow 3} f(x) = 17}$$