10.

Ενοτητα 8

B $\lim\limits_{x\to 2} \dfrac{x^2-2x}{3x^2-5x-2} = \lim\limits_{x\to 2} \dfrac{x\cancel{(x-2)}}{\cancel{(x-2)}(3x+1)} = \dfrac{2}{7}.$

3	−5	−2	2
↓	6	2	
3	1	0	

11. B $\lim\limits_{x\to -1} \dfrac{x^3+1}{x^3+x+2} = \lim\limits_{x\to -1} \dfrac{\cancel{(x+1)}(x^2-x+1)}{\cancel{(x+1)}(x^2-x+2)}$

1	0	1	2	−1
↓	−1	1	−2	
1	−1	2	0	

$= \dfrac{3}{4}$

13. B $\lim\limits_{x\to 5} \dfrac{\sqrt{x}-\sqrt{5}}{5-x} = \lim\limits_{x\to 5} \dfrac{(\sqrt{x}-\sqrt{5})(\sqrt{x}+\sqrt{5})}{(5-x)(\sqrt{x}+\sqrt{5})}$

$= \lim\limits_{x\to 5} \dfrac{\sqrt{x}^2-\sqrt{5}^2}{(5-x)(\sqrt{x}+\sqrt{5})} = \lim\limits_{x\to 5} \dfrac{\cancel{x-5}}{-\cancel{(x-5)}(\sqrt{x}+\sqrt{5})}$

$= \dfrac{1}{-2\sqrt{5}}.$

20. B $\lim_{x\to -1} \dfrac{|\overset{0}{x^2-1}| - x^2+x+2}{\sqrt{x+2}-1}$

x	-1 1
x^2-1	$+$ $-$ $+$

$\to \lim_{x\to -1^-} \dfrac{|\overset{+}{x^2-1}| - x^2+x+2}{\sqrt{x+2}-1} = \lim_{x\to -1^-} \dfrac{(x+1)(\sqrt{x+2}+1)}{(\sqrt{x+2}-1)(\sqrt{x+2}+1)}$

$= \lim_{x\to -1^-} \dfrac{(\cancel{x+1})(\sqrt{x+2}+1)}{\cancel{x+1}} = 2.$

$\to \lim_{x\to -1^+} \dfrac{|\overset{-}{x^2-1}| - x^2+x+2}{\sqrt{x+2}-1} = \lim_{x\to -1^+} \dfrac{(-2x^2+x+3)(\sqrt{x+2}+1)}{x+1}$

-2	1	3	-1
$\downarrow$	2	-3	
-2	3	0	

$= \lim_{x\to -1^+} \dfrac{(\cancel{x+1})(-2x+3)(\sqrt{x+2}+1)}{\cancel{x+1}}$

$= 5\cdot 2 = 10.$

Το όριο δεν υπάρχει

20. (a) $\lim_{x\to 1} \dfrac{|x-1| + x^2-2x+1}{x^5-1}$.

$$\begin{array}{cccccc|c} 1 & 0 & 0 & 0 & 0 & -1 & 1 \\ \downarrow & 1 & 1 & 1 & 1 & 1 & \\ 1 & 1 & 1 & 1 & 1 & 0 & \end{array}$$

x		1	
$x-1$	$-$		$+$

$\rightarrow \lim_{x\to 1^-} \dfrac{|x-1| + x^2-2x+1}{x^5-1} = \lim_{x\to 1^-} \dfrac{-\cancel{(x-1)} + (x-1)^{\cancel{2}}}{\cancel{(x-1)}(x^4+x^3+x^2+x+1)}$

$$= \frac{-1+0}{5} = -\frac{1}{5}.$$

$\rightarrow \lim_{x\to 1^+} \dfrac{|x-1| + x^2-2x+1}{x^5-1} = \lim_{x\to 1^+} \dfrac{\cancel{(x-1)} + (x-1)^{\cancel{2}}}{\cancel{(x-1)}(x^4+x^3+x^2+x+1)}$

$$= \frac{1}{5}.$$

Το όριο δεν υπάρχει.

19. (a) $$\lim_{x\to 2}\frac{|\overset{\oplus}{x-1}|-|\overset{\ominus}{x-3}|}{x^2-4}=\lim_{x\to 2}\frac{x-1-(-x+3)}{x^2-4}$$

$$=\lim_{x\to 2}\frac{x-1+x-3}{x^2-4}=\lim_{x\to 2}\frac{2x-4}{x^2-4}=$$

$$=\lim_{x\to 2}\frac{2\cancel{(x-2)}}{\cancel{(x-2)}(x+2)}=\lim_{x\to 2}\frac{2}{x+2}=\frac{1}{2}.$$

(γ) $$\lim_{x\to -1^+}\frac{|\overset{0}{x+1}|+x^2-x-2}{x^3+1}$$

x		-1	
$x+1$	$-$		$+$

$$=\lim_{x\to -1^+}\frac{|\overset{\oplus}{x+1}|+x^2-x-2}{x^3+1}=$$

$$=\lim_{x\to -1^+}\frac{x+1+x^2-x-2}{x^3+1}=\lim_{x\to -1^+}\frac{x^2-1}{x^3+1}$$

$$=\lim_{x\to -1}\frac{(x-1)\cancel{(x+1)}}{\cancel{(x+1)}(x^2-x+1)}=\frac{-2}{3}.$$

13. y

$$\lim_{x\to 0} \frac{x}{1-\sqrt{3x+1}} = l_{x\to 0} \frac{x\left(1+\sqrt{3x+1}\right)}{\left(1-\sqrt{3x+1}\right)\left(1+\sqrt{3x+1}\right)}$$

$$= l_{x\to 0} \frac{x\left(1+\sqrt{3x+1}\right)}{1^2-\cancel{\sqrt{}}\,3x+1^{\cancel{2}}} = l_{x\to 0} \frac{x\left(1+\sqrt{3x+1}\right)}{\cancel{1}-3x-\cancel{1}}$$

$$= l_{x\to 0} \frac{\cancel{x}\left(1+\sqrt{3x+1}\right)}{-3\cancel{x}} = \frac{2}{-3}.$$

13. б $\lim\limits_{x \to 1} \dfrac{\sqrt{x+3}-2}{x^2-1} =$

$$= \lim_{x \to 1} \frac{(\sqrt{x+3}-2)(\sqrt{x+3}+2)}{(x-1)(x+1)(\sqrt{x+3}+2)}$$

$$= \lim_{x \to 1} \frac{\cancel{\sqrt{x+3}^{\,2}}-2^2}{(x-1)(x+1)(\sqrt{x+3}+2)}$$

$$= \lim_{x \to 1} \frac{\cancel{x-1}}{\cancel{(x-1)}(x+1)(\sqrt{x+3}+2)} = \frac{1}{8}$$

13. 1 $\displaystyle \lim_{x \to 1} \frac{\sqrt{3x^2+1}-2}{x^2-5x+4} =$

$$= \lim_{x \to 1} \frac{\left(\sqrt{3x^2+1}-2\right)\left(\sqrt{3x^2+1}+2\right)}{(x-4)(x-1)\left(\sqrt{3x^2+1}+2\right)} =$$

$$= \lim_{x \to 1} \frac{\sqrt{3x^2+1}^{\,2}-2^2}{(x-4)(x-1)\left(\sqrt{3x^2+1}+2\right)}$$

$$= \lim_{x \to 1} \frac{3x^2-3}{(x-4)(x-1)\sqrt{3x^2+1}+2} =$$

$$= \lim_{x \to 1} \frac{3\cancel{(x-1)}(x+1)}{(x-4)\cancel{(x-1)}\left(\sqrt{3x^2+1}+2\right)} = \frac{6}{-3\cdot 4}$$

$$= -\frac{1}{2}.$$

13. (γ) $\lim_{x\to 2} \dfrac{x-2}{\sqrt{x+2}-2} = \lim_{x\to 2} \dfrac{(x-2)(\sqrt{x+2}+2)}{(\sqrt{x+2}-2)(\sqrt{x+2}+2)}$

$= \lim_{x\to 2} \dfrac{(x-2)(\sqrt{x+2}+2)}{\sqrt{x+2}^2-2^2} = \lim_{x\to 2} \dfrac{\cancel{(x-2)}(\sqrt{x+2}+2)}{\cancel{x-2}}$

$= \lim_{x\to 2} \sqrt{x+2}+2 = 4$

(στ) $\lim_{x\to 3} \dfrac{\sqrt{x^2+2}-\sqrt{11}}{x^2-5x+6} =$

$= \lim_{x\to 3} \dfrac{(\sqrt{x^2+2}-\sqrt{11})(\sqrt{x^2+2}+\sqrt{11})}{(x-2)(x-3)(\sqrt{x^2+2}+\sqrt{11})}$

$= \lim_{x\to 3} \dfrac{\sqrt{x^2+2}^2-\sqrt{11}^2}{(x-2)(x-3)(\sqrt{x^2+2}+\sqrt{11})}$

$= \lim_{x\to 3} \dfrac{x^2-9}{(x-2)(x-3)(\sqrt{x^2+2}+\sqrt{11})} = \lim_{x\to 3} \dfrac{\cancel{(x-3)}(x+3)}{(x-2)\cancel{(x-3)}(\sqrt{x^2+2}+\sqrt{11})} = \dfrac{6}{2\sqrt{11}}$

13. ⓒ $\lim_{x \to 2} \frac{x^2-2x}{\sqrt{x^2+5}-3} = \lim_{x\to 2} \frac{x(x-2)(\sqrt{x^2+5}+3)}{(\sqrt{x^2+5}-3)(\sqrt{x^2+5}+3)}$

$= \lim_{x\to 2} \frac{x(x-2)(\sqrt{x^2+5}+3)}{\cancel{\sqrt{x^2+5}}^{2}-3^2} = \lim_{x\to 2} \frac{x(x-2)(\sqrt{x^2+5}+3)}{x^2-4}$

$= \lim_{x\to 2} \frac{x\cancel{(x-2)}(\sqrt{x^2+5}+3)}{\cancel{(x-2)}(x+2)} = \lim_{x\to 2} \frac{x(\sqrt{x^2+5}+3)}{x+2}$

$= \frac{2\cdot 6}{4} = 3.$

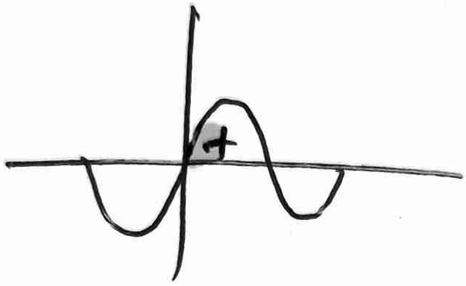
9. ⓐ $\lim\limits_{x\to 0} \dfrac{x+1+\sqrt{x}}{x} = \lim\limits_{x\to 0^+} (x+1+\sqrt{x})\dfrac{1}{x}$

Ενότητα 9

$= 1\cdot(+\infty) = +\infty$.

(β) $\lim\limits_{x\to 0} \dfrac{1+\sqrt{x}}{\eta\mu x} = \lim\limits_{x\to 0^+} (1+\sqrt{x})\dfrac{1}{\eta\mu x} = 1\cdot(+\infty)$

$= +\infty$



(γ). $\lim\limits_{x\to 0}\left(\dfrac{2}{x}-\dfrac{2}{\sqrt{x}}\right) = \lim\limits_{x\to 0}\dfrac{2\sqrt{x}-2x}{x\sqrt{x}} =$

$= \lim\limits_{x\to 0}\dfrac{2(\sqrt{x}-x)}{x\sqrt{x}} = \lim\limits_{x\to 0} 2\cdot\lim\limits_{x\to 0}\dfrac{\sqrt{x}-x}{x\sqrt{x}}$

$= 2\cdot\lim\limits_{x\to 0}\dfrac{(\sqrt{x}-x)(\sqrt{x}+x)}{x\sqrt{x}\,(\sqrt{x}+x)} =$

$= 2\lim\limits_{x\to 0}\dfrac{\sqrt{x}^{\cancel{2}}-x^2}{x\sqrt{x}\,(\sqrt{x}+x)} = 2\lim\limits_{x\to 0}\dfrac{\cancel{x}(1-x)}{\cancel{x}\sqrt{x}\,(\sqrt{x}+x)}$

$$= 2 \cdot \lim_{x \to 0^+} \frac{1-x}{\sqrt{x}\,(\sqrt{x}+x)} =$$

$$= 2 \lim_{x \to 0^+} (1-x) \cdot \frac{1}{\sqrt{x}\,(\sqrt{x}+x)} = 2 \cdot 1 \cdot (+\infty)$$

$$\oplus \quad \oplus$$

$$= +\infty.$$

8. (B) $\lim_{x \to -\infty} \dfrac{\overset{\ominus}{|x^3-2x+3|}+x-1}{x^4+2x+2} =$

$\rightarrow \lim_{x \to -\infty} x^3-2x+3 = \lim_{x \to -\infty} x^3 = -\infty$

$= \lim_{x \to -\infty} \dfrac{-x^3+2x-3+x-1}{x^4+2x+2} =$

$= \lim_{x \to -\infty} \dfrac{-x^3}{x^4} = \lim_{x \to -\infty} -\dfrac{1}{x} = 0.$

2. (a) i) . $\lim_{x \to -\infty} f(x) = +\infty.$ ii) $\lim_{x \to -\infty} \dfrac{1}{f(x)} = \dfrac{1}{+\infty}$

$= 0$

(B) i) $\lim_{x \to +\infty} f(x) = 1.$ ii). $\lim_{x \to +\infty} \dfrac{1}{f(x)-1} =$

$\dfrac{1}{0} = +\infty.$

$f(x) > 1$

$f(x) - 1 > 0$

3. ⓐ $\lim_{x \to -\infty} f(x) = 0$

ⓑ $\lim_{x \to -\infty} \frac{1}{f(x)} = +\infty$

$\oplus$

ⓒ $\lim_{x \to 0} f(x) = +\infty$.

ⓓ $\lim_{x \to 0} \frac{\eta \mu x}{f(x)} = \lim_{x \to 0} \eta\mu x \cdot \frac{1}{f(x)} = 0 \cdot \frac{1}{\infty} = 0 \cdot 0 = 0$.

ⓔ $\lim_{x \to 1} \frac{1}{f(x)} = \frac{1}{0^+} = +\infty$

ⓢⓣ $\lim_{x \to 2} \frac{1}{f(x) - 1} = \frac{1}{0^-} = -\infty$

$f(x) < 1 \Rightarrow f(x) - 1 < 0$

ⓩ $\lim_{x \to 3} \frac{\ln(3-x)}{f(x)} = \lim_{x \to 3} \ln(3-x) \cdot \frac{1}{f(x)}$

$= -\infty$.

$\rightarrow \lim_{x \to 3^-} \ln(3-x) \dfrac{1}{f(x)} = -\infty \cdot (+\infty) = -\infty$

$\rightarrow \lim_{x \to 3^+} \ln(3-x) \dfrac{1}{f(x)} = -\infty(-\infty) = +\infty$

Το όριο δεν υπάρχει.

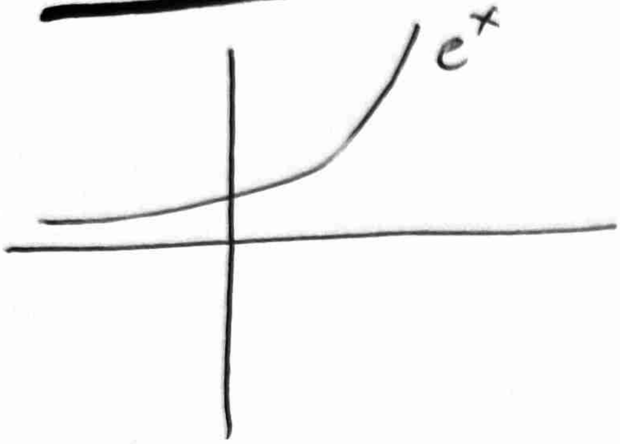
(ii) $\lim_{x \to +\infty} f(f(x)) = \lim_{u \to -\infty} f(u) = 0.$

Θέτω $f(x) = u$

$x \to +\infty$

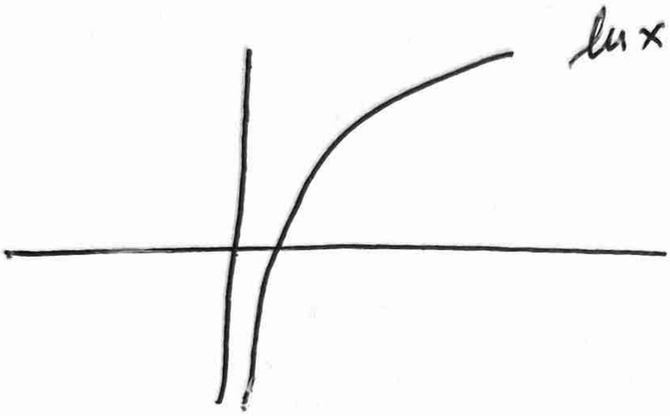
$u \to -\infty$

Μεγαλη προσοχη



$\lim_{x \to -\infty} e^x = 0$

$\lim_{x \to +\infty} e^x = +\infty$.



$\lim_{x \to 0^+} \ln x = -\infty$

$\lim_{x \to +\infty} \ln x = +\infty$

Μνημονικοι κανονες

$$e^{-\infty} = 0$$

$$e^{+\infty} = +\infty$$

$$\ln 0 = -\infty$$

$$\ln +\infty = +\infty.$$

10. (8). $\lim\limits_{x\to-\infty} \sqrt{9x^2+x+1} + 3x$

$$= \lim_{x\to-\infty} \frac{\left(\sqrt{9x^2+x+1} + 3x\right)\left(\sqrt{9x^2+x+1} - 3x\right)}{\sqrt{9x^2+x+1} - 3x}$$

$$= \lim_{x\to-\infty} \frac{\sqrt{9x^2+x+1}^{\,2} - (3x)^2}{\sqrt{9x^2+x+1} - 3x}$$

$$= \lim_{x\to-\infty} \frac{\cancel{9x^2}+x+1-\cancel{9x^2}}{\sqrt{9x^2+x+1} - 3x} = \lim_{x\to-\infty} \frac{x+1}{\sqrt{9x^2+x+1} - 3x}$$

$$= \lim_{x\to-\infty} \frac{x\left(1+\frac{1}{x}\right)}{\sqrt{x^2\left(9+\frac{1}{x}+\frac{1}{x^2}\right)} - 3x} = \lim_{x\to-\infty} \frac{x\left(1+\frac{1}{x}\right)}{\sqrt{x^2}\sqrt{9+\frac{1}{x}+\frac{1}{x^2}} - 3x}$$

$$= \lim_{x\to-\infty} \frac{\cancel{x}\left(1+\frac{1}{x}\right)}{-\cancel{x}\sqrt{9+\frac{1}{x}+\frac{1}{x^2}} - 3\cancel{x}} = \frac{1}{-3-3} = -\frac{1}{6}$$

10. (B) $\lim\limits_{x \to +\infty} \left(\sqrt{4x^2+1} - 2x\right) \overset{+\infty - \infty}{=\!=\!=}$;

$$= \lim_{x \to +\infty} \frac{\left(\sqrt{4x^2+1} - 2x\right)\left(\sqrt{4x^2+1} + 2x\right)}{\sqrt{4x^2+1} + 2x}$$

$$= \lim_{x \to +\infty} \frac{\cancel{\sqrt{4x^2+1}}^{\,\cancel{2}} - (2x)^2}{\sqrt{4x^2+1} + 2x}$$

$$= \lim_{x \to +\infty} \frac{4\cancel{x^2}+1 - 4\cancel{x^2}}{\sqrt{4x^2+1} + 2x} = \lim_{x \to +\infty} \frac{1}{\sqrt{4x^2+1} + 2x}$$

$$= 0.$$

9. (β) $\lim_{x \to -\infty} \sqrt{x^2 - 5x + 2} = \sqrt{+\infty} = +\infty$

(δ) $\lim_{x \to -\infty} \left(\sqrt{x^2+1} - x\right) = \sqrt{+\infty} - (-\infty) =$

$= +\infty + \infty = +\infty$

(στ) $\lim_{x \to -\infty} \dfrac{x+1}{\sqrt{x^2+1}} =$

$$= \lim_{x \to -\infty} \frac{x\left(1 + \frac{1}{x}\right)}{\sqrt{x^2\left(1 + \frac{1}{x^2}\right)}} =$$

$$= \lim_{x \to -\infty} \frac{x\left(1 + \frac{1}{x}\right)}{\sqrt{x^2}\sqrt{1 + \frac{1}{x^2}}} =$$

$$= \lim_{x \to -\infty} \frac{x\left(1 + \frac{1}{x}\right)}{|\overset{\ominus}{x}|\sqrt{1 + \frac{1}{x^2}}} = \lim_{x \to -\infty} \frac{\cancel{x}\left(1 + \frac{1}{x}\right)}{-\cancel{x}\sqrt{1 + \frac{1}{x^2}}}$$

$$= \frac{1 + 0}{-\sqrt{1 + 0}} = -1.$$

Τριγωνομετρικα ορια

Βασικα ορια

$$\lim_{x \to 0} \frac{ημx}{x} = 1$$

$$\lim_{x \to 0} \frac{συνx - 1}{x} = 0$$

extra

$$\lim_{x \to x_0} \frac{ημf(x)}{f(x)} = 1$$ μονο αν $\lim_{x \to x_0} f(x) = 0$.

π.χ

$$\lim_{x \to 1} \frac{ημ(x-1)}{x-1} = 1$$

$$\lim_{x \to x_0} \frac{συνf(x) - 1}{f(x)} = 0$$ μονο αν $\lim_{x \to x_0} f(x) = 0$.

π.χ

$$\lim_{x \to -\infty} \frac{συνe^x - 1}{e^x} = 0$$ γιατι $\lim_{x \to -\infty} e^x = 0$

$$\boxed{\lim_{x \to x_0} f(x) = 0}$$

$$\lim_{x \to x_0} \frac{\eta\mu\, f(x)}{f(x)} \xlongequal[\substack{x \to x_0 \\ t \to 0}]{f(x)=t} \lim_{t \to 0} \frac{\eta\mu\, t}{t} = 1.$$

1. $\lim_{x \to 0} x^2 ημ\frac{1}{x} \xlongequal[\text{κριτήριο}]{\text{ημ}\infty} 0$

$-1 \le ημ\frac{1}{x} \le 1$

$$\boxed{-x^2 \le x^2 ημ\frac{1}{x} \le x^2}$$

$\left.\begin{array}{l} \lim_{x \to 0} -x^2 = 0 \\ \lim_{x \to 0} x^2 = 0 \end{array}\right\}$ Από κριτήριο παρεμβολής $\lim_{x \to 0} x^2 ημ\frac{1}{x} = 0$

2. $\lim_{x \to 0} x\, ημ\frac{1}{x} \xlongequal{\text{ημ}\infty} 0$

$-1 \le ημ\frac{1}{x} \le 1$

$|ημ\frac{1}{x}| \le 1$

$|x| \cdot |ημ\frac{1}{x}| \le |x|$

$|x\, ημ\frac{1}{x}| \le |x|$

$-|x| \le x\, ημ\frac{1}{x} \le |x|$

$$\left.\begin{aligned} &\lim_{x\to 0} -|x| = 0 \\ &\lim_{x\to 0} |x| = 0 \end{aligned}\right\} \quad \text{Άρα } \text{Κ.Π} \quad \lim_{x\to 0} x\,ημ\frac{1}{x} = 0 .$$

3. $$\lim_{x\to +\infty} x\,ημ\frac{1}{x} \overset{ημ\,0}{=\!=}$$

$$= \lim_{x\to+\infty} \cancel{x}\,\frac{ημ\frac{1}{x}}{\frac{1}{x}}\,\cancel{\frac{1}{x}} = \lim_{x\to+\infty} \frac{ημ\frac{1}{x}}{\frac{1}{x}} =$$

$$\underset{\substack{x\to+\infty \\ t\to 0}}{\overset{\frac{1}{x}=t}{=\!=\!=}} \lim_{t\to 0} \frac{ημ\,t}{t} = \underline{1}$$

28. (B) $\lim\limits_{x\to+\infty} \eta\mu\left(\dfrac{x}{x^2+1}\right) = \eta\mu 0 = 0$

$\rightarrow \lim\limits_{x\to+\infty} \dfrac{x}{x^2+1} = \lim\limits_{x\to+\infty} \dfrac{\cancel{x}}{x^{\cancel{2}}} = 0$

29. (B) $\lim\limits_{x\to-\infty} \left(\sqrt{x^2+1}+x\right)\eta\mu x \quad \dfrac{\eta\mu\infty}{\text{[illegible]}}$,

$-1 \le \eta\mu x \le 1$

$|\eta\mu x| \le 1$

$\left|\sqrt{x^2+1}+x\right| |\eta\mu x| \le 1 \cdot \left|\sqrt{x^2+1}+x\right|$

$\left|\left(\sqrt{x^2+1}+x\right)\eta\mu x\right| \le \left|\sqrt{x^2+1}+x\right|$

$$\boxed{-\left|\sqrt{x^2+1}+x\right| \le \left(\sqrt{x^2+1}+x\right)\eta\mu x \le \left|\sqrt{x^2+1}+x\right|}$$

$\rightarrow \lim\limits_{x\to-\infty} \left(\sqrt{x^2+1}+x\right) = \lim\limits_{x\to-\infty} \dfrac{\left(\sqrt{x^2+1}+x\right)\left(\sqrt{x^2+1}-x\right)}{\sqrt{x^2+1}-x}$

$= \lim\limits_{x\to-\infty} \dfrac{\left(\sqrt{x^2+1}\right)^2 - x^2}{\sqrt{x^2+1}-x} = \lim\limits_{x\to-\infty} \dfrac{1}{\sqrt{x^2+1}-x} = 0$

$$\lim_{x\to-\infty} -\left|\sqrt{x^2+1} - x\right| = 0$$

$$\lim_{x\to-\infty} \left|\sqrt{x^2+1} - x\right| = 0$$

Απο Κ.Π

$$\lim_{x\to-\infty} \left(\sqrt{x^2+1} + x\right) \eta\mu x = 0.$$

Μεθοδος

$$\lim_{x \to x_0} g(x)\, \eta\mu f(x)$$

1. Αν το ηρετονο απειριζεται τοτε
   πρεπει να χτισω.

$$-1 \le \eta\mu f(x) \le 1$$

αλλο
χασιμο.

Χασιμο με
απολυτα

Εξαρταται απο το αν
γνωριζω το προσημο του
$g(x)$

2. Αν το ηριτονο μηδενιζεται
   τοτε του ειναι αυτο που θελω

$$\lim_{x \to x_0} g(x)\, \eta\mu f(x) = \lim_{x \to x_0} g(x) \frac{\eta\mu f(x)}{f(x)} f(x)$$

1. διαγωνισμα Μαθηματικων

12/10/25

Θεωρια

1.1 2.3
1.3 2.5
1.5
1.6
1.7
1.10
1.11
1.12
1.13
1.44
1.15

3

2
5
6
8
13

4

9.
10
12
14
15
16
20
23

6

2
4
5
6
7
8
9

7

7 26
17 28
18 29
19 31
20
22
23
24
25.

+ 2 διαγωνισματα.

8 9 10

Γενικη επαναληψη ορια.

Εποπτικό Μαθημα

Τεταρτη 7/10 9-11:30.

9

(5) α β γ δ

(6) α γ δ στ

(7) α β γ δ

(10) α.

10

(4)

(5) α β γ ε

(6) α β δ ε στ.

(7) α β γ.

(8) α.

(9) α γ ε

(10) α γ.