AP Calculus AB

Infinite Limits (Continued)

Name______________________

Limits, Cont., & R.O.C Day 7

1-16: Find the limit or show that it does not exist.

1. $\lim_{x\to\infty} \frac{3x-2}{2x+1} = \boxed{\frac{3}{2}}$

Marilyn so y = leading coeff.

2. $\lim_{x\to\infty} \frac{1-x^2}{x^3-x+1} = \boxed{0}$

J-Lo so y = 0

3. $\lim_{x\to-\infty} \frac{x-2}{x^2+1} = \boxed{0}$

J-Lo

4. $\lim_{x\to-\infty} \frac{4x^3+6x^2-2}{2x^3-4x+5} = \frac{4}{2} = \boxed{2}$

Marilyn

5. $\lim_{t\to\infty} \frac{\sqrt{t}+t^2}{2t-t^2} = \frac{+1}{-1} = \boxed{-1}$

Marilyn

6. $\lim_{t\to\infty} \frac{t-t\sqrt{t}}{2t^{3/2}+3t-5} = \lim_{t\to\infty} \frac{t-t^{3/2}}{2t^{3/2}+3t-5} = \boxed{\frac{-1}{2}}$

$t\sqrt{t} = t^1 \cdot t^{1/2} = t^{3/2}$

7. $\lim_{x\to\infty} \frac{(2x^2+1)^2}{(x-1)^2(x^2+x)}$

$\lim_{x\to\infty} \frac{4x^4+4x^2+1}{(x^2-2x+1)(x^2+x)} = \lim_{x\to\infty} \frac{4x^4+4x^2+1}{x^4+ \text{☺☺☺}} = \boxed{4}$

Marilyn

8. $\lim_{x\to\infty} \frac{x^2}{\sqrt{x^4+1}} = \frac{1}{\sqrt{1}} = \boxed{1}$

$\sqrt{x^4} = x^2$

Marilyn

9. $\lim_{x\to\infty} \frac{\sqrt{9x^6-x}}{x^3+1} = \frac{\sqrt{9}}{1} = \boxed{3}$

$\sqrt{x^6} = x^3$

Marilyn

10. $\lim_{x\to-\infty} \frac{\sqrt{9x^6-x}}{x^3+1} = \frac{\sqrt{9}}{-1} = \boxed{-3}$

$\sqrt{x^6} = x^3$

11. $\lim_{x\to\infty} \frac{x^4-3x^2+x}{x^3-x+2}$ $\frac{(\text{huge Pos})^4}{(\text{hug Pos})^3} = \frac{+}{+} = \boxed{+\infty}$

(Dolly

huge Pos#

12. $\lim_{x\to-\infty} (x^4 + x^5) = (\text{hugeNeg})^4 + (\text{hugeNeg})^5$

$(+) + (-)$

$\boxed{-\infty}$

Dolly)

hugeNeg#

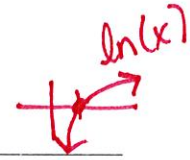
13. $\lim_{x\to-\infty} \frac{1+x^6}{x^4+1} = \frac{1+(-)^6}{(-)^4+1} = \frac{+}{+} = \boxed{+\infty}$

Dolly )

huge Neg#

14. $\lim_{x\to\infty} \frac{1-e^x}{1+2e^x} = \boxed{\frac{-1}{2}}$

Marilyn




15. $\lim_{x\to\infty} \frac{\sin^2 x}{x^2+1}$ sin x = # between [-1, 1]

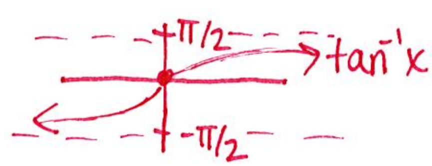
$\lim_{x\to\infty} \frac{1}{x^2+1} = \boxed{0}$

J-Lo

16. $\lim_{x\to 0^+} \tan^{-1}(\ln x)$ $\lim_{x\to 0^+} \ln(x) = -\infty$

$\tan^{-1}(-\infty)$

$= \boxed{-\frac{\pi}{2}}$




☺ We will talk about tomorrow ☺