1.3 Asymptotes

CA #1

Calculus Name: _____

Identify the vertical asymptotes of each function.

1. $f(x) = \frac{x-3}{x^2-10x+21}$

2. $f(x) = \frac{x-5}{5x^2-29x+20}$

Identify the horizontal asymptotes of each function.

3. $f(x) = \frac{\sqrt{4x^4-3x}}{4x^2}$

4. $f(x) = \frac{\sqrt{9x^{14}-3x^2+1}}{4x^7-8x} + 1$

Evaluate each limit.

5. $\lim_{x\to\infty} \frac{x+2}{2x^2+2x+1}$

6. $\lim_{x\to\infty} \frac{x^6}{2^x} - 2$

7. $\lim_{x\to\infty} \left(\cos\frac{1}{x} - \frac{6x^3+8x}{2x^3}\right)$

8. $\lim_{x\to\infty} \frac{6x^2-x^3+1}{2x^2+4x-1}$

9. $\lim_{x\to\infty} 2x \sin x$

10. $\lim_{x\to-\infty} \frac{7x^2-2x+4}{3x^2-6x}$

11. $\lim_{x\to\infty} \sin\left(\frac{2x+\pi x^2}{x^2}\right)$

12. $\lim_{x\to\infty} \cos\left(\frac{\pi x^2+x}{8+4x^2}\right)$

13. $\lim_{x\to\infty} x^5 3^{-x}$

14. $\lim_{x\to\infty} \left(\frac{\cos x}{x} + 1\right)$

15. $\lim_{x\to\infty} \cos(3x)$

16. $\lim_{x\to-\infty} \frac{2x^2-6x+8x^6}{2x^6-5x^4}$

Answers to 1.3 CA #1

1. $x = 7$	2. $x = \frac{4}{5}$	3. $y = \frac{1}{2}$	4. $y = \frac{7}{4}$ and $y = \frac{1}{4}$	5. 0	6. -2	7. -2	8. $-\infty$
9. DNE, Oscillating.	10. $\frac{7}{3}$	11. 0	12. $\frac{\sqrt{2}}{2}$	13. 0	14. 1	15. DNE, Oscillating.	16. 4