

Name: _____

AP

Classwork 10

1. Find each limit

a) $\lim_{x \rightarrow 0} \frac{10}{x}$

b) $\lim_{x \rightarrow 0} \frac{5}{x^4}$

c) $\lim_{x \rightarrow \infty} \frac{3x - 5}{x^3}$

d) $\lim_{x \rightarrow \infty} 4x - x^2$

e) $\lim_{x \rightarrow \infty} x - x$

f) $\lim_{x \rightarrow \infty} x/2 - \sqrt{x}$

2. Find each limit

a) $\lim_{x \rightarrow 4} \frac{1 - 6/x + 8/x^2}{x^2 - 16}$

b) $\lim_{x \rightarrow \infty} \frac{1 - 6/x + 8/x^2}{x^2 - 16}$

c) $\lim_{x \rightarrow 0} \frac{1 - 6/x + 8/x^2}{x^2 - 16}$

3. Find each limit.

a) $\lim_{x \rightarrow \infty} \frac{2x^4 + 5x^2 - 10x + 1}{x^5 + 7x^3 - 9}$

b) $\lim_{x \rightarrow 0} \frac{6x^7 - 3x^5 - 4x^3}{3x^6 + 6x^4 + 2x^3}$

4. Find $\lim_{x \rightarrow \infty} \frac{3x^3 - x - 1}{5x^3 + x^2}$

5. Find $\lim_{x \rightarrow 0} \frac{4x^5 + x^3 - 5x^2}{x^7 - 10x^4 + x^2}$

6. Find $\lim_{x \rightarrow 0} \frac{\sin x}{x}$

7. Find $\lim_{x \rightarrow 9} \frac{x^2 - 81}{\sqrt{x} - 3}$

8. Write the complex conjugate of each complex number.

a) $4 + 2i$

b) $3 - 7i$

c) $1 + .5i$

9. What could you multiply the following expression by in order to remove **all** square root signs?

$$4 - \sqrt{5}$$

10. Find $\lim_{x \rightarrow 0} \frac{\sqrt{x^2 + 9} - 3}{x^2}$

11. Find $\lim_{x \rightarrow 10} \frac{\sqrt{x - 1} - 3}{x - 10}$

Practice Problems

1. Write a limit problem where plugging in gives you $0 \div 0$ but the limit equals 4.
2. Explain when you should use “divide by the highest power” and when you should use “divide by the lowest power”.
3. Find $\lim_{x \rightarrow 0} \frac{x^5 - x^4 - 6x^3}{2x^4 + 3x^2}$
4. Find $\lim_{x \rightarrow 4} \frac{\sqrt{25 - x^2} - 3}{x - 4}$