

Infinite Limits

Example

1. Find $\lim_{x \rightarrow 0^-} x^{-1} e^{x^{-2}}$.

Problems

2. Find $\lim_{x \rightarrow 2\pi^-} x \csc(x)$.

3. Find $\lim_{x \rightarrow 2\pi^+} x \csc(x)$.

4. Find $\lim_{x \rightarrow 2^-} \frac{x^2 - 2x - 8}{-(x^2 - 5x + 6)}$.

5. Find $\lim_{x \rightarrow 2^+} \frac{x^2 - 2x - 8}{-(x^2 - 5x + 6)}$.

6. Find $\lim_{x \rightarrow 3^-} \frac{\sqrt{x}}{(x - 3)^4}$.

7. Find $\lim_{x \rightarrow 3^+} \frac{\sqrt{x}}{(x - 3)^4}$.

Implicit Differentiation

Example

1. Find y' if $x^3 + y^3 = 4$.

2. Find y' if $e^{xy} = e^{4x} - e^{5y}$.

Problems

3. Find y' if $(x - y)^2 = x + y - 1$.

4. Find y' if $y = \sin(3x + 4y)$.

5. Find y' if $y = x^2y^3 + x^3y^2$.
6. Find y' if $\cos^2 x + \cos^2 y = \cos(2x + 2y)$.
7. Find y' if $x = 3 + \sqrt{x^2 + y^2}$.
8. Given $\frac{x-y^3}{y+x^2} = x + 2$, find y' .
9. Find y' give that $\frac{y}{x^3} + \frac{x}{y^3} = x^2y^4$.
10. Find y' given $(x^2 + y^2)^3 = 8x^2y^2$.