

CALCULUS I—Worksheet #12

Questions

1. $\lim_{x \rightarrow 4} \frac{x^2 - 16}{x - 4}$

2. $\lim_{x \rightarrow 0} \frac{\sin x}{x}$

3. $\lim_{h \rightarrow 0} \frac{\ln(x+h) - \ln x}{h}$

4. $\lim_{x \rightarrow 0} \frac{\sin 3x}{\sin 8x}$

5. $\lim_{x \rightarrow 0} \frac{\tan 4x}{x}$

6. $\lim_{h \rightarrow 0} \frac{(x+h)^7 - x^7}{h}$

7. $\lim_{h \rightarrow 0} \frac{\ln(1+h)}{h}$

8. $\lim_{x \rightarrow 0} \frac{1 - \sqrt{x}}{1 - x}$

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

10. $\lim_{x \rightarrow 0} \frac{x^2}{1 - \cos x}$

11. $\lim_{x \rightarrow \infty} \frac{3 - 3x^3 + 3x + x^2}{4x - 2x^2 + 7x^4}$

12. $\lim_{x \rightarrow 0} \frac{2x + \sin x}{4x}$

13. $\lim_{x \rightarrow 2} \frac{x^3 - 27}{x - 3}$

14. $\lim_{x \rightarrow \infty} \frac{\cos 7x}{4x^3}$

15. $\lim_{x \rightarrow 4^+} \frac{x - 5}{x - 4}$

16. Find $\frac{dy}{dx}$ if $y = u^2 + 1$ and $u = x^2 + 1$

17. What is the slope of the curve $y = 2x^2 - 6x + 3$ at the point where $x = 2$?

18. Write the equation of the line tangent to $y = 2x^2 - 6x + 3$ at the point where $x = 2$

19. Find $\frac{dy}{dx}$: $y = (\sin x)^x$