Calculus Test Problems

Problem 1: Find the derivative of: x^4

Problem 2: Find the integral of: $\frac{1}{x^3}$

Problem 3: Use U-substitution to find the integral of: $\sin(2x)$

Problem 4: Use integration by parts to find the integral of: $x\log(x)$

Problem 5: Find the integral of the trigonometric function: $\cos^2(x)$

Problem 6: Use trigonometric substitution to find the integral of: $\sqrt{x^2 - 1}$

Problem 7: Use partial fractions to find the integral of: $\frac{1}{x^2 + 1}$

Problem 8: Find the improper integral of: $\frac{1}{x^2 + 1}$ from 1 to ∞

Problem 9: Find the limit of: $\lim\limits_{x \to \infty} \cos(x)$

Problem 10: Find the sum of the series: $\sum\limits_{n=0}^{\infty} \frac{x^n}{n!}$