MATH2403A__ 4 – 13 – 2000 TEST 6 NAME:_____
INSTRUCTOR:_____ STUDENT NO:_____
Show all work.

1. (A) Find all critical points of $x'' - x^4 + 25\,x^2 - 144 = 0.$
(B) Use the energy method to determine the stability of the critical points found in Part (A).

2. Find Laplace transforms of the following f(t):
(1) $f(t) = 9t^8$
(2) $f(t) = 3e^{-2t} + 2cosh(3t)$
(4) $f(t) = 2sin^2(3t)$

3. Find the inverse Laplace transforms of the following F(s):
(1) $F(s) = \frac{1}{(s+2)^9}$
(2) $F(s) = \frac{14}{(s-4)(s-9)}$
(3) $F(s) = \frac{12}{(s^2+1)(s^2+9)}$

4. Use Laplace transforms to solve the initial value problem
$x''(t) + 4x'(t) + 8x(t) = 0$ **with** $x(0) = 3,\ x'(0) = 0.$