Name: _____ Period: ____

Date: _____ Row: _____

PRACTICE TEST 2 FRQ #1-3

PRACTICE TEST 2-1

Let f be the function given by $f(x) = x^3 - 5x^2 + 3x + k$, where k is a constant.

(a) On what intervals is f increasing?

(b) On what intervals is the graph of f concave downward?

(c) Find the value of k for which f has 11 as its relative minimum.

PRACTICE TEST 2-2

A particle moves on the x-axis so that its position at any time $t \geq 0$ is given by $x(t) = 2te^{-t}$.

(a) Find the acceleration of the particle at $t = 0$.

(b) Find the velocity of the particle when its acceleration is 0.

(c) Find the total distance traveled by the particle from $t = 0$ to $t = 5$.

PRACTICE TEST 2-3

Consider the curve $y^2 = 4 + x$ and chord AB joining the points $A(-4, 0)$ and $B(0, 2)$ on the curve.

(a) Find the x- and y-coordinates of the point on the curve where the tangent line is parallel to chord AB.

(b) Find the area of the region R enclosed by the curve and the chord AB.

(c) Find the volume of the solid generated when the region R, defined in part (b), is revolved about the x-axis.