(1) Find $\frac{dy}{dx}$ in the following cases:

(a) $y = 2x^5 + 3x^2 - 1 + \frac{3}{x}$

(b) $y = 6x^{-4} + \sqrt{x} - \frac{1}{\sqrt{2x}}$

(c) $y = (4x - 5)^6$

(d) $y = \frac{1}{x+1}$

(e) $y = \frac{x+1}{x^2}$

(f) $y = \sqrt{x^2 - 4}$

(g) $y = \frac{2x^3 - 3}{4 - 3x^2}$

(h) $y = (x^2 - 1)^3(3x + 1)^4$

(2) Find the any turning points of the given graph and distinguish between them.

(a) $y = x^3 - 5x^2 + 7x$

(b) $y = (2x - 5)^4$

(c) $y = x(x + 4)^3$

(d) $y = x^2(x - 3)^4$

(e) $y = \frac{2x - 1}{x^2 + 2}$

(f) $y = \frac{x^2 - 1}{x^2 + 1}$

(3) A rectangular field is to be bounded by a fence on three sides and by a straight stream on the fourth side. Find the dimension of the field with maximum area that can be enclosed with 1000 feet of fence.