

Evaluate the following derivatives $f'(a)$ for the given f and a .

(a) $f(x) = x^3 + x\sqrt{x} - 5x + 1$, $a = 0$

(b) $f(x) = x^3 + x^2 + x + 1$, $a = 2$

(c) $f(x) = 1 + (x - 1) + (x - 1)^2 + (x - 1)^3 + \dots$, $a = 1$

(d) $f(x) = x^2 + 3x + 1$, $a = 5$

Using the following information, approximate $f(5)$:

$$f(0) = 2, f'(0) = -1, f'(2) = 1, f'(3) = 4, f'(4) = 1$$

Suppose that a ball is thrown upward from a height of 4 feet and you have the following information on its velocity:

$$v(0) = 20, v(1) = 14, v(2) = 8, v(3) = 2, v(4) = -4, v(5) = -10$$

At approximately what time did the ball reach its maximum height?