In April 1991, the Economist (www.economist.com) carried an article which said:

Suddenly, everywhere, it is not the rate of change of things that matters, it is the rate of change of rates of change. Nobody cares much about inflation; only whether it is going up or down. Or rather, whether it is going up fast or down fast. "Inflation drops by disappointing two points," cries the billboard. Which roughly translated means that prices are still rising, but less fast than they were, though not quite as much less fast as everybody had hoped.

The last sentence ("*Which roughly translated means that . . .*") has three statements about prices. Each can be rewritten in terms of one or more derivatives. (See text problem 56 on page 119.)

With the goal of simplifying a comparison of various statements, let's use the notational convention that $p(t)$ is the average price level at time t (and let t_0 be April 1991, date of the article).

Several rewrites are shown for each statement.   **Task: identify plausibly correct version(s).**

1. "*prices are still rising*"   [ignore tense of verbs: i.e., "is" = "was", "are" = "were" (in 1991)]

    a) $p(t)$ is positive   [consider this equivalent to "$p(t)$ was positive (in April 1991)"]
    b) $p(t)$ is decreasing [was decreasing in 1991]
    c) $p(t)$ is increasing
    d) $p'(t_0) > 0$ [t_0 is defined/described above.]
    e) $p'(t)$ is increasing
    f)   the slope of the first derivative of p' is increasing

2. "*but less fast than they were*"

    a) $p'(t)$ is positive
    b) $p'(t)$ is increasing [was increasing in April 1991]
    c) $p'(t)$ is constant
    d) $p'(t)$ is decreasing
    e) $p''(t_0) < 0$
    f)   graph of p is concave down
    g)   graph of p' is concave down

3. "*though not quite as much less fast as everybody had hoped*"

    a)   people hoped $p'(t_0)$ would be closer to zero
    b)   magnitude of $p'(t)$ is smaller than hoped for
    c)   change in magnitude of $p'(t)$ is smaller than hoped for
    d) $p''(t_0)$ is just barely negative
    e) $H < p''(t_0)$ where H is the hoped–for rate of change in the rates of change in prices
    f) $p''(t_0)$ is constant
    g)   the derivative of $p'(t)$ is not as negative as people had hoped for