AB. Q100 . L3 . GRAPH 2

A. $g'(5) = -1 \leftarrow$ point of g' graph $(5, -1)$

B. g is increasing on $[-1, 2] \cup [6, 7]$ because the slope of g is positive on $(-1, 2) \cup (6, 7)$

C. g has a relative min at $x = -1$ and $x = 6$ because at these x-values g is continuous and the slope of g goes from negative to positive

D. g is concave down on $(1, 4)$ because the slope of g decreases on this interval.

E. $g(1) = 4$ Given $g'(1) = 1$ point on slope graph

$$y - 4 = 1(x - 1)$$

F.

$$g'(x) = \begin{cases} -4 + 2(x+3) & ; \quad -3 \le x \le -1 \\ \frac{1}{2}(x+1) & ; \quad -1 < x \le 1 \\ 1 - (x-1) & ; \quad 1 < x \le 4 \\ -2 + (x-4) & ; \quad 4 < x \le 7 \end{cases}$$

slope of $g \equiv g'(x)$

AB.Ⓞ100.L3.Graph 3

A] $f'(-2) = 0$ point on f' graph

B] f is decreasing on $[-2, 4]$ or $[-2, 1] \cup [1, 4]$

* b/c the slope of f is negative on $(-2, 1) \cup (1, 4)$

C] f has a relative max at $x = -2$ b/c at this x-value f is continuous and the slope of f goes from positive to negative

D] f is concave down on $(-3, -1) \cup (1, 3)$ because the slope of f is decreasing on this interval

E] $f(1) = 3$ Given $f'(1) = 0$

$$y - 3 = 0(x - 1) \rightarrow y = 3$$

slope of $f \equiv f'(x)$

AB.Q100.L3.GRAPH 4

A] $f'(-0.25) = -1.75$ ← point on graph (equation of segment useful)

B] f is increasing on $[-3, -2]$
because the slope of f is positive on $(-3, -2)$

C] f has a local max at $x = -2$ b/c at $x = -2$
f is continuous and the slope of f goes from positive to negative.

D] f is concave up on $(0, 2)$ because the slope of f is increasing on this interval.

E] $f(0) = 3$ $f'(0) = -2$ $y - 3 = -2(x - 0)$

F]

$$f'(x) = \begin{cases} 1 - (x+3) \; ; & -3 \le x \le 0 \\ -2 + \sqrt{4-(x-2)^2} \; ; & 0 < x \le 4 \end{cases}$$

$$(x-2)^2 + (y+2)^2 = 4$$

$$(y+2)^2 = 4 - (x-2)^2$$

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

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

slope of f $\equiv f'(x)$

AB.Q100.L3 GRAPH 5

A] $h'(4) = -4$ $h'(5)$ DNE

B] h is increasing on $[-1,1] \cup [5,7]$
because the slope of h is positive on $(-1,1) \cup (5,7)$

C] h has a relative min at $x = -1$ and $x = 5$
because at these x-values h is continuous and
the slope of h goes from negative to positive.

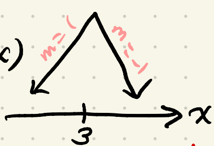
D] h is concave down on $(0,3)$ because the slope of h is
decreasing on this interval.

E] $h(0) = 0$ $h'(0) = 2$ $\boxed{y = 2(x)}$

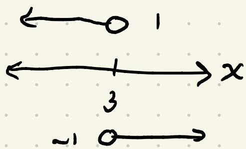
F]
$$h'(x) = \begin{cases} -2 + 2(x+2) & ; \ -2 \le x \le 0 \\ 2 - 2(x) & ; \ 0 < x \le 3 \\ -4 & ; \ 3 < x < 5 \\ 3 & ; \ 5 < x \le 7 \end{cases}$$

G] A continuous function that has a sharp corner
will fail to have a slope at that corner.
The slope may jump from one value to the next
causing a jump discontinuity in the slope or derivative
graph.

ex: $y = f(x)$



$y = f'(x)$



* slope of h $\equiv$ $h'(x)$