

This is the point to write your name: Key

AP Calculus AB: 4.9 Points of Inflection

1. Find where the function $h(x) = \frac{2x^3}{3} - \frac{7x^2}{2} - 30x + 8$;
a) is increasing. Justify.

$$h'(x) = 2x^2 - 7x - 30$$

$$CN \quad x = \frac{-5}{2}, 6$$

$$\text{inc: } (-\infty, \frac{-5}{2}] [6, \infty)$$

- b) where the maximum occurs. Justify.

$x = \frac{-5}{2}$ because $h'(x)$ switched from positive to negative

- c) is concave down. Justify.

$$h''(x) = 4x - 7$$

$$x = \frac{7}{4}$$



$$CD: (-\infty, \frac{7}{4})$$

$$h''(0) = -$$

$$h''(2) = +$$

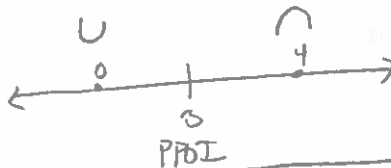
- d) where there is a point of inflection. Justify.

$x = \frac{7}{4}$ because $h''(x)$ switched signs

2. Find where the function $f(x) = \sqrt[3]{3x-9}$ is concave up. Justify.

$$f''(x) = \frac{-2 \stackrel{=0}{}}{\sqrt[3]{(3x-9)^5} = 0}$$

$$x = 3$$



$$CU: (-\infty, 3)$$

$$f''(0) = +$$

$$f''(4) = -$$

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4. Find all the x-values where the function $g'(x) = (x + 2)^3(x - 6)^2$ has minimum values. Justify.



min @ $x = -2$

5. Find all the x-values where the function has a point of inflection $f''(x) = (x - 1)(x + 3)^2(x - 4)^2$. Justify.

