

solution

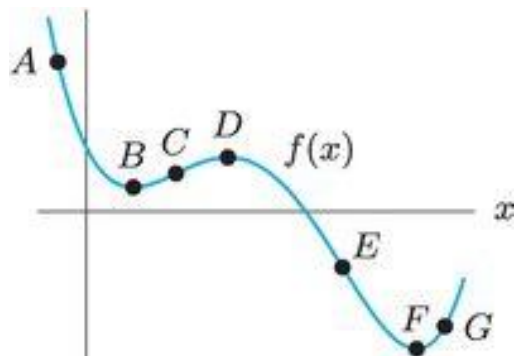
Problem 1.

A - The function g is given in the figure below.

At which of the labeled points is

(1pt) (a) $g(x)$ positive and has a zero slope? B,D

(1pt) (b) $g(x)$ negative? E,F, G

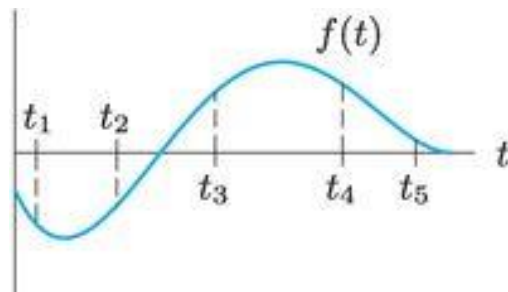


B - The figure here shows the graph of $f(t)$.

At which of the marked values of t are the following values true?

(1pt) (a) $f(t) > 0$ t_3, t_4, t_5

(1pt) (b) $f(t)$ is increasing t_2, t_3



Problem 2

a- We consider the periodic function: $f(x) = -2 - 5\sin(-1 + 4x)$. Find its amplitude A_0 , vertical shift C , phase shift f , and its period T

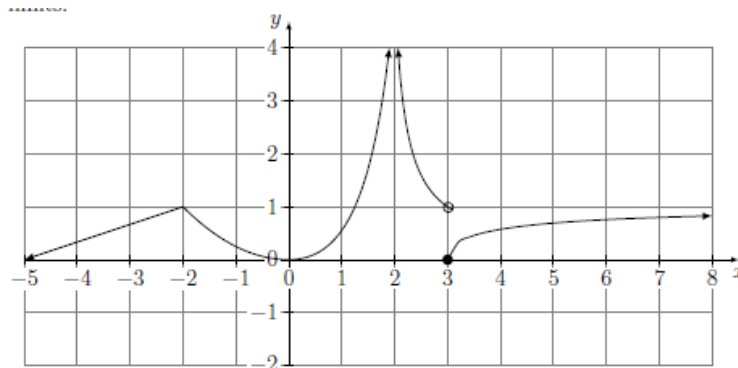
$$A_0 = |-5| = 5$$

(2pt) $T = \pi/2$

$$C = -2$$

$$f = 1/4$$

b- Consider the following graph of the function $f(x)$.



- Find the limits:

(2pts)

$$\lim_{x \rightarrow 3^+} f(x) = 0$$

$$\lim_{x \rightarrow 3^-} f(x) = 1$$

$$\lim_{x \rightarrow 3} f(x) = \text{DNE}$$

$$\text{Domain } D = \mathbb{R} \setminus \{2\}$$

- At which points f is discontinuous

(2pts)

f is discontinuous at $x=2$ and $x=3$