TEST Number 1, Chapter number 1, Calculus

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Q: 1 *Find solution sets of the following inequalities.* (5 + 2 + 3)

(a) $\frac{2x+2}{x-3} \leq 4$

(b) $-5 < x < -4$

(c) $|t+4| = |4+3t|$

Q: 2 (7 + 8)

Find point of discontinuity of the functions

(a)$[x] - x$.

(b)find a and b so that the function becomes continuous

$$f(x) = 2x, x < 3, f(x) = ax^3 + bwhenx = 3, f(x) = x^2 whenx > 3 \quad (1)$$

Q: 3 (7 + 8)

find the following limits

(a)$\lim x[x]$ *when x approaches to 0.*

(b)prove that $\lim sinx/x$ *when x approaches to 0.*

Q: 4

Find the domain, range and draw the graph of the function. (5+5)

$$f(x) = \begin{cases} \sqrt{x + \frac{1}{x}} & \text{if } x < 0 \\ x & \text{if } x = 0 \\ \sqrt{x - \frac{1}{x}} & \text{if } x > 0 \end{cases}$$

(ii). Also find $f(5), f(0)$ *and* $f(\frac{-1}{2})$. (1+1+1)