

UNIVERSITY OF SASKATCHEWAN
Department of Mathematics & Statistics
Mathematics 101.3 Practice Quiz #2

November 1, 1999

Time: 50 minutes

Instructor: *Doug MacLean*

CLOSED BOOK — NO CALCULATORS PERMITTED

Each question is worth 4%

PART I

The possible answers to all questions in Part I are the digits in the **ANSWER SET**:

(A) 0 (B) 1 (C) 2 (D) 3 (E) 4 (F) 5 (G) 6 (H) 7 (I) 8 (J) 9

Evaluate the limits:

(1) $\lim_{x \rightarrow -5} \frac{10 - 3x - x^2}{x + 5}$

(2) $\lim_{x \rightarrow 7} \frac{3x^2 - 28x + 49}{2x - 14}$

(3) $\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ if $f(x) = -\frac{3}{x}$

(4) The natural domain of the function $f(x) = \sqrt{9x+1}$ is of the form $[-\frac{1}{a}, \infty)$. $a = ?$

(5) If $f(x) = 4x^2 - 6x + 9$ then $f'(1) =$

(6) If $f(x) = 5x^2 - 3x + 20$ then $f'(1) =$

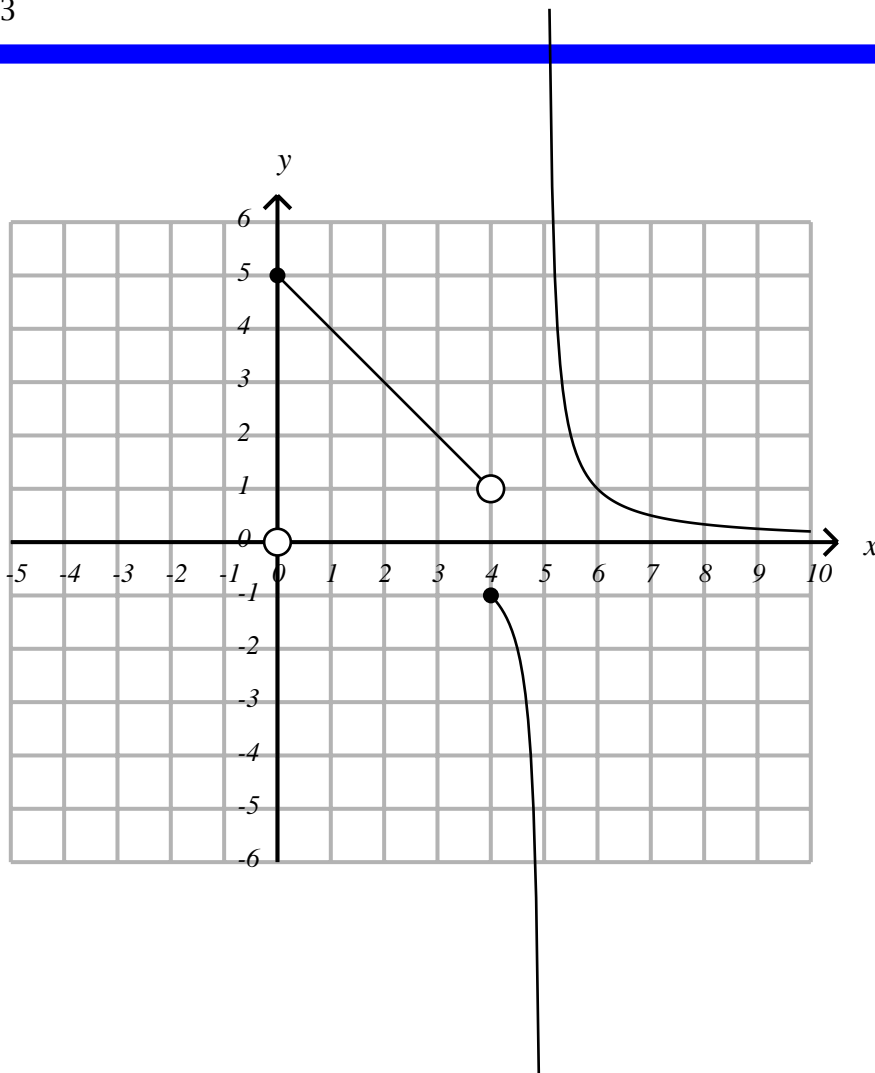
(7) The y -intercept of the line tangent to the graph $y = \frac{1}{x}$ at the point $(2, \frac{1}{2})$ is:

PART II

The possible answers to all questions in Part I are the digits in the ANSWER SET:

(A) $-\infty$ (B) -5 (C) -2 (D) -1 (E) 0 (F) 1 (G) 2 (H) 5 (I) 8 (J) ∞

(8) $\lim_{x \rightarrow -3^-} \frac{4x + 7}{x + 3} = ?$



Part of the graph of $y = f(x) = \begin{cases} 0 & \text{if } x < 0 \\ 5 - x & \text{if } 0 \leq x < 4 \\ \frac{1}{x - 5} & \text{if } 4 \leq x \text{ and } x \neq 5 \end{cases}$ is shown above. Find:

(9) $\lim_{x \rightarrow -\infty} f(x)$

(10) $\lim_{x \rightarrow 0^-} f(x)$

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

(12) $\lim_{x \rightarrow 4^-} f(x)$

(14) $\lim_{x \rightarrow 4^+} f(x)$

(13) $\lim_{x \rightarrow 5^-} f(x)$

(14) $\lim_{x \rightarrow 5^+} f(x)$

(15) $\lim_{x \rightarrow \infty} f(x)$

PART III

The graph of $y = f(x) = x^2$ with domain $[-2, 2]$ is shown to the right. Parts of the graphs of

- (16) $y = f(x) + 1$,
- (17) $y = f(x + 1)$,
- (18) $y = f(x) - 1$,
- (19) $y = f(x - 1)$,
- (20) $y = -f(x)$,
- (21) $y = 2f(x)$,
- (22) $y = f(2x)$,
- (23) $y = f(x)/2$,
- (24) $y = f(x/2)$,

and (25) $y = -f(x) + 1$, are shown below. Match them.

