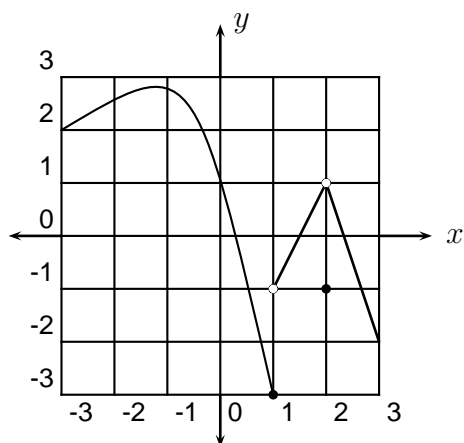


231 Gateway 1 Practice Test - Limits

No uses of Calculators; No Partial Credit. 30 minutes to finish test. More space will be provided on the actual test.

1. (20 pts) Find the Limits (or write DNE for "does not exist") for the function $y = f(x)$ given by the graph:



(a) $\lim_{x \rightarrow -2} f(x) =$

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

(c) $\lim_{x \rightarrow 1^+} f(x) =$

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

(e) $\lim_{x \rightarrow 1} f(x) =$

2. (8 pts) For the function $y = f(x)$ defined on the interval $[-3, 3]$ by the graph above, at what values of x in the interval is the function not continuous?

3. (30 pts) Find the limits

(a) $\lim_{x \rightarrow 3} x^2 - x + 1$

(b) $\lim_{x \rightarrow -2} \frac{(x+2)(x+3)}{(x+2)}$

(c) $\lim_{t \rightarrow 2^-} \frac{3}{t-2}$

(d) $\lim_{t \rightarrow 2^+} \frac{3}{t-2}$

(e) $\lim_{s \rightarrow 5} \frac{5}{(s-5)^2}$

(f) $\lim_{t \rightarrow 0} \frac{5t}{\sin(2t)}$

4. (12 pts) At which values of the independent variable are the following functions continuous?

(a) $f(x) = 16x^4 - 3x^3 + 2x + 1$

(b) $g(y) = \frac{67}{y^2 - 9}$

5. (10 pts) Find the limit: $\lim_{t \rightarrow -\infty} \frac{1}{(x+1)^2} - 2$.

6. (10 pts) Find the limit: $\lim_{u \rightarrow \infty} \frac{3u^2 + 1}{u^2 + 3}$.

7. (10 pts) Give the equations of the horizontal and vertical asymptotes of the given function. You should assume that the s -axis is horizontal.

$$t = \frac{3s + 1}{2 - s}$$

Horizontal Asymptote:

Vertical Asymptote: