Exercise 1 *Let* $g(x) = 2\,|x-1|$, *and* $h(x) = -(x-1)^2$.

For the following limits determine whether the form of the limit is determinate or indeterminate, determine the form of the limit and compute the value of the limit. Possible answers include a number, $+\infty$, $-\infty$ *and* DNE.

$$\lim_{x\to 1} \frac{h(x)}{g(x)} = \boxed{0}$$

Choose all correct statements.

Select All Correct Answers:

(a) *The limit is of determinate form.*

(b) *The limit is of indeterminate form.* ✓

(c) *The limit is of the form* $\frac{0}{0}$. ✓

(d) *The limit is of the form* $\frac{\#}{0}$.

$$\lim_{x\to 1^+} \frac{g(x)}{h(x)} = \boxed{-\infty}$$

Choose all correct statements.

Select All Correct Answers:

(a) *The limit is of determinate form.*

(b) *The limit is of indeterminate form.* ✓

(c) *The limit is of the form* $\frac{0}{0}$. ✓

(d) *The limit is of the form* $\frac{\#}{0}$.

$$\lim_{x\to 1^-} \frac{g(x)}{h(x)} = \boxed{-\infty}$$

Choose all correct statements.

Select All Correct Answers:

(a) *The limit is of determinate form.*

(b) *The limit is of indeterminate form.* ✓

(c) *The limit is of the form* $\frac{0}{0}$. ✓

(d) *The limit is of the form* $\frac{\#}{0}$.

$$\lim_{x \to 1} \frac{g(x)}{h(x)} = \boxed{-\infty}$$

Choose all correct statements.

Select All Correct Answers:

(a) *The limit is of determinate form.*

(b) *The limit is of indeterminate form.* ✓

(c) *The limit is of the form* $\frac{0}{0}$. ✓

(d) *The limit is of the form* $\frac{\#}{0}$.

$$\lim_{x \to 1^-} \frac{g(x) - g(1)}{x - 1} = \boxed{-2}$$

Choose all correct statements.

Select All Correct Answers:

(a) *The limit is of determinate form.*

(b) *The limit is of indeterminate form.* ✓

(c) *The limit is of the form* $\frac{0}{0}$. ✓

(d) *The limit is of the form* $\frac{\#}{0}$.

$$\lim_{x \to 1^+} \frac{g(x) - g(1)}{x - 1} = \boxed{2}$$

Choose all correct statements.

Select All Correct Answers:

(a) *The limit is of determinate form.*

(b) *The limit is of indeterminate form.* ✓

(c) *The limit is of the form* $\frac{0}{0}$. ✓

(d) *The limit is of the form* $\frac{\#}{0}$.

$$\lim_{x \to 1} \frac{g(x) - g(1)}{x - 1} = \boxed{DNE}$$

Choose all correct statements.

Select All Correct Answers:

(a) *The limit is of determinate form.*

(b) *The limit is of indeterminate form.* ✓

(c) *The limit is of the form* $\frac{0}{0}$. ✓

(d) *The limit is of the form* $\frac{\#}{0}$.
