1. [–/1 Points] **DETAILS** SCALCET9 4.4.001.

Given that

$$\lim_{x \to a} f(x) = 0$$

$$\lim_{x \to a} g(x) = 0$$

$$\lim_{x \to a} h(x) = 1$$

$$\lim_{x \to a} p(x) = \infty$$

$$\lim_{x \to a} q(x) = \infty,$$

evaluate if the following limits are not indeterminate forms. (If a limit is indeterminate, enter INDETERMINATE.)

(a) $\lim_{x \to a} \frac{f(x)}{g(x)}$

(b) $\lim_{x \to a} \frac{f(x)}{p(x)}$

(c) $\lim_{x \to a} \frac{h(x)}{p(x)}$

(d) $\lim_{x \to a} \frac{p(x)}{q(x)}$

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2. [–/1 Points] **DETAILS** SCALCET9 4.4.003.

Given that

$$\lim_{x \to a} f(x) = 0$$

$$\lim_{x \to a} g(x) = 0$$

$$\lim_{x \to a} h(x) = 1$$

$$\lim_{x \to a} p(x) = \infty$$

$$\lim_{x \to a} q(x) = \infty,$$

evaluate if the following limits are not indeterminate forms. (If a limit is indeterminate, enter INDETERMINATE.)

(a) $\lim_{x \to a} [f(x) - p(x)]$

(b) $\lim_{x \to a} [p(x) - q(x)]$

(c) $\lim_{x \to a} [p(x) + q(x)]$

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3. [–/1 Points] **DETAILS** SCALCET9 4.4.004.

Given that

$$\lim_{x \to a} f(x) = 0$$

$$\lim_{x \to a} g(x) = 0$$

$$\lim_{x \to a} h(x) = 1$$

$$\lim_{x \to a} p(x) = \infty$$

$$\lim_{x \to a} q(x) = \infty,$$

evaluate if the following limits not are indeterminate forms. (If a limit is indeterminate, enter INDETERMINATE.)

(a) $\lim_{x \to a} [f(x)]^{g(x)}$

(b) $\lim_{x \to a} [f(x)]^{p(x)}$

(c) $\lim_{x \to a} [h(x)]^{p(x)}$

(d) $\lim_{x \to a} [p(x)]^{f(x)}$

(e) $\lim_{x \to a} [p(x)]^{q(x)}$

(f) $\lim_{x \to a} \sqrt[q(x)]{p(x)}$

4. [–/1 Points] **DETAILS** SCALCET9 4.XP.4.006.

Find the limit. Use l'Hospital's rule where appropriate. If there is a more elementary method, consider using it.

$$\lim_{\theta \to \pi/2} \frac{1 - \sin(\theta)}{1 + \cos(6\theta)}$$

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5. [–/1 Points] DETAILS SCALCET9 4.XP.4.016.

Find the limit. Use l'Hospital's rule if appropriate. If there is a more elementary method, consider using it.

$$\lim_{x \to 0} \frac{e^{9x} - 1 - 9x}{x^2}$$

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6. [–/1 Points] DETAILS SCALCET9 4.4.030.

Find the limit. Use l'Hospital's Rule where appropriate. If there is a more elementary method, consider using it.

$$\lim_{x \to 0} \frac{3x - \sin(3x)}{3x - \tan(3x)}$$

7. [–/1 Points] DETAILS SCALCET9 4.4.059.MI.

Find the limit. Use l'Hospital's Rule where appropriate. If there is a more elementary method, consider using it.

$$\lim_{x \to 0} (1 - 4x)^{1/x}$$

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8. [–/1 Points] DETAILS SCALCET9 4.XP.4.022.MI.SA.

This question has several parts that must be completed sequentially. If you skip a part of the question, you will not receive any points for the skipped part, and you will not be able to come back to the skipped part.

Tutorial Exercise

Find the limit. Use l'Hospital's Rule if appropriate. If there is a more elementary method, consider using it.

$$\lim_{x \to 0^+} \cot(5x) \sin(15x)$$

Click here to begin!

9. [–/1 Points] DETAILS SCALCET9 4.XP.4.004.

Evaluate the limit.

$$\lim_{x \to 1} \frac{x^7 - 1}{x^3 - 1}$$

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10. [–/1 Points] DETAILS SCALCET9 4.4.026.

Find the limit. Use l'Hospital's Rule where appropriate. If there is a more elementary method, consider using it.

$$\lim_{u \to \infty} \frac{e^{u/15}}{u^3}$$

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