Practice Problems

1. Find $\lim_{x \to 4} \frac{x^2 - 25}{x^2 - 16}$ **Numerator approaches 16 - 25 = -9. Denominator gets close to 0, but +0 if we go from numbers greater than 4 and -0 if we take numbers less than 4. So, there is no limit.**

2. Find $\lim_{x \to \infty} \frac{x^2 - 25}{x^2 - 16}$ **Divide all terms by x^2. The limit is 1.**

3. Find $\lim_{x \to 0} \frac{x^2 - 25}{x^2 - 16}$ **There is no problem with dividing by 0, so just plug in. -25/-16 = 1.5625**

Answer each question using the given information.

4. $\lim_{x \to 4+} f(x) = 7$ and $\lim_{x \to 4-} f(x) = 5$ So, $\lim_{x \to 4} f(x) =$

a) 7 b) 5 c) Does not exist. d) Cannot be determined from this information.

5. $\lim_{x \to 0+} f(x) = 12$ and $\lim_{x \to 0-} f(x) = 12$ So, $\lim_{x \to 0} f(x) =$

a) 0 b) 12 c) Does not exist. d) Cannot be determined from this information.

6. $\lim_{x \to -2+} f(x) = 3$ and $\lim_{x \to -2-} f(x) = 3$ $f(-2) = 10$ So, $\lim_{x \to 0} f(x) =$

a) 3 b) 10 c) Does not exist. d) Cannot be determined from this information.

7. $\lim_{x \to -7+} f(x) = 10$ and $\lim_{x \to -7-} f(x) = 10$ $\lim_{x \to -7} f(x) = 10.$ So, $f(-7) =$

a) 10 b) -7 c) Does not exist. d) Cannot be determined from this information.