Present neatly on separate paper. Justify for full credit. No Calculators.

Name _____   Score _____   ~15 minutes

1.   True or False? Explain. [5 points]

a)

If $|f|$ is continuous at a, so is f.

b)

The equation $x^{10} - 10x^2 + 5 = 0$ has a root in the interval $(0, 2)$.

c)

If $f(1) > 0$ and $f(3) < 0$, then there exists a number c between 1 and 3 such that $f(c) = 0$.

d)

If $\lim_{x \to 6} [f(x) g(x)]$ exists, then the limit must be $f(6) g(6)$.

e)

If neither $\lim_{x \to a} f(x)$ nor $\lim_{x \to a} g(x)$ exists, then $\lim_{x \to a} [f(x) + g(x)]$ does not exist.

2. Find the limit or explain why it does not exist. [5 points]

a)

$\lim_{x \to 0} \dfrac{1 - \sqrt{1 - x^2}}{x}$

b)

$\lim_{x \to 1} \left(\dfrac{1}{x - 1} + \dfrac{1}{x^2 - 3x + 2} \right)$