Name ___Solutions_____ Quiz 3, Calculus 1

1) Find each of the following limits.

$$\lim_{x\to 3^+} \frac{x^2-5x+6}{x^2-6x+9} = \lim_{x\to 3^+} \frac{(x-2)(x-3)}{(x-3)^2} = \lim_{x\to 3^+} \frac{(x-2)}{(x-3)} = \infty$$

$$\lim_{x\to \infty} \frac{x^3+3x+2}{2x^3+x^4} = 0$$

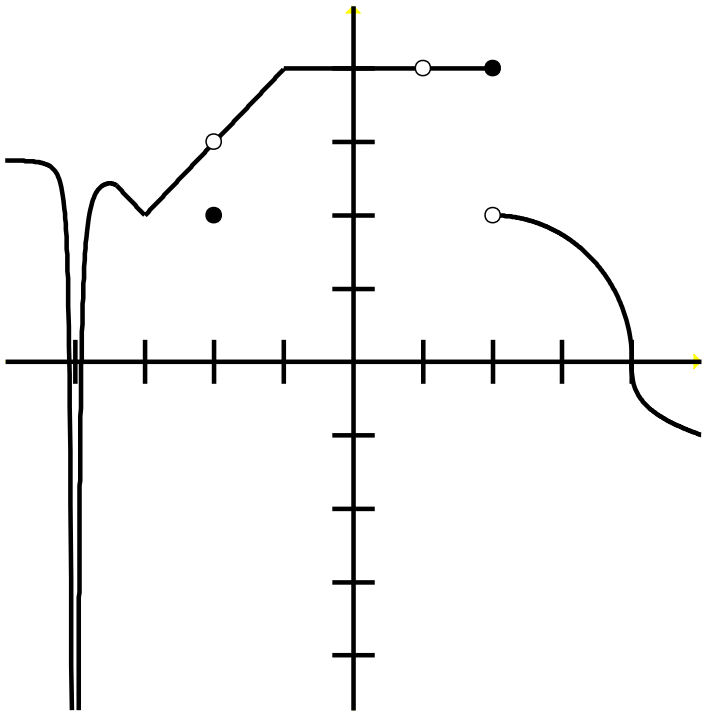
(Note that x^4 is the dominant term in the denominator!!)

2) For the function graphed below, identify each x-value at which the function is NOT continuous.

f is not continuous at the following points:
$x = -4, -2, 1, 2$

$x = -4$ is an infinite discontinuity
$x = -2$ is a removable discontinuity
$x = 1$ just doesn't exist
$x = 2$ is a jump discontinuity

(Note if you're reviewing this in the future after we've covered derivatives: Something weird is happening at $x = 4$ with that vertical tangent. f itself is continuous, but the derivative is not)



3) Find the value of a so that the limit below equals 4.

$$\lim_{x\to -\infty} \frac{ax^2+3}{2x^2+4} = \frac{a}{2}$$

We choose $a = 8$.