

## Limits - Review III

### Key

1.  $3x^2 - 4x + 5$

2. Left hand limit  $\neq$  Right hand limit  $\Rightarrow$  Limit DNE

3. Draw any graph that has a Point Discontinuity at  $x = c$  and a closed circle point with its

$x$ -coordinate =  $c$  and its  $y$ -coordinate =  $y$ -coordinate of hole .

4.  $c = 2, d = -7$

5.  $c = \frac{7}{3}, -\frac{5}{3}$

6. Find any two values of  $x$  (e.g.  $x = a$  and  $x = b$ ) such that  $f(a) < -5$  and  $f(b) > -5$ . Since  $f(x)$

is a polynomial, it is continuous for  $x = [a, b]$  and according to the IVT, there must exist at least

one value of  $x = c$  over  $x = [a, b]$  such that  $f(c) = -5$ . Therefore,  $f(x) = -5$  has at least one

solution.

7. Not continuous because Left Hand Limit is  $-3$  and the Right Hand Limit is  $7$ .