Name

Directions: Read each question carefully. Show appropriate supporting work where necessary to receive full credit.

NO CALCULATOR!

1) Solve the equation. SHOW WORK!

$$\frac{x}{x+2} + \frac{5}{x-3} = \frac{25}{x^2 - x - 6}$$

2) For the function $f(x) = \frac{x-2}{x^2-2x-3}$, find all asymptotes and intercepts. SHOW appropriate supporting work! Then graph it and write the end behavior limits.



3) For the function $h(x) = \frac{x^2 + 4x - 5}{x + 3}$, find all asymptotes and intercepts. SHOW appropriate supporting work! Then graph it and write the end behavior limits.



4) Solve the inequality using a sign chart.

5) Solve the inequality using a sign chart.

$$(x+3)(x^2+4)(x+1)^2 > 0$$

$$\frac{\sqrt{x+5}}{x-3} \le 0$$

CALCULATOR OK!

6) A box is to be built out of a rectangular sheet of cardboard with dimensions 15 by 20 inches, by cutting squares out of each corner of the cardboard with length x.

A) Write an equation that models the volume of the box.

B) What values of x (the cut) will give a box with a volume of at least 150 cubic inches?