Problem 1: **Determine the horizontal asymptote of the graph of the function:**

$$f(x) = \frac{4x^3 - 2x^2 + 3x + 7}{4 - 8x + 3x^3 + x^2}$$

(A)y=1 (B)y=4/3 (C)y=0 (D) y=7/4

Problem 2: **Determine the domain of the function:**

$$f(x) = \frac{x+2}{(x+1)(x-3)}$$

(A) $(-\infty,-2) \cup (-2,\infty)$

(B) $(-\infty,-2) \cup (-2,-1) \cup (-1,3) \cup (3,\infty)$

(C) $(-\infty,-1) \cup (-1,3) \cup (3,\infty)$

(D) $(-\infty,-1) \cup (-1,3) \cup (3,-\infty)$

Problem 3: **Determine the vertical asymptote(s) of the graph of the function:**

$$f(x) = \frac{3x^2}{4 - 4x^2}$$

(A) x=-3/4 (B) x=0 (C) x=0, x=1 (D) x=1, x=-1

Problem 4: **Given the function** $f(x) = \frac{x+2}{(x+1)(x-3)}$, solve f(x) = 0.

(A) -2 (B) -1, 3 (C) -2,-1,3 (D) 0

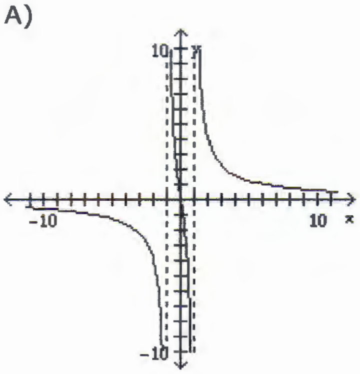
Problem 5: **Find the zeros of the polynomial function**:

$$f(x) = -10(x-8)^7(x+8)^2x^9.$$

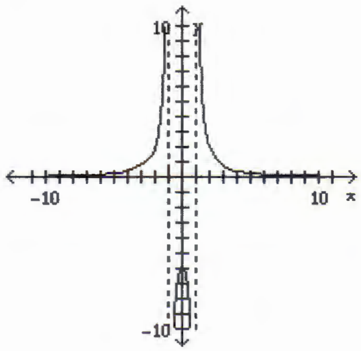
(A) 7, 2, 9 (B)-10, 8, -8 (C) -8, 0, 8 (D) 8, -8, 9

Problem 6: **Match the equation with the appropriate graph.** $f(x) = \dfrac{x^3}{x^2 - 1}$

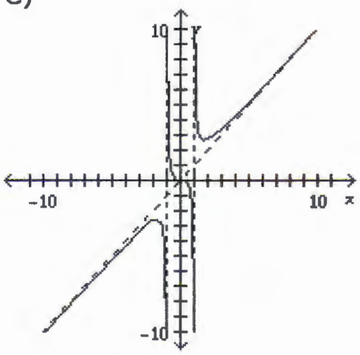
A)



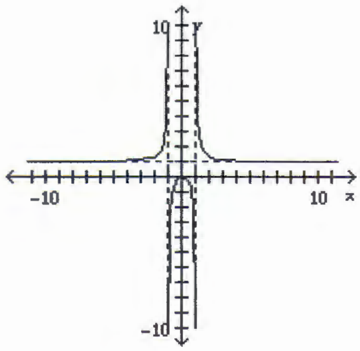
B)



C)



D)



Problem 7: **Using the intermediate value theorem, determine whether the following function has at least one zero between the numbers -2 and 1:**

$$f(x) = -x^3 + 3x + 1$$

(A) No (B) Yes (C) Cannot tell

Problem 8: **Find a rational function that satisfies the conditions: x-intercept (-2,0); vertical asymptotes x=-1 and x=6.**

(A) $\frac{x+2}{x^2+11x+6}$ (B) $\frac{x+2}{x^2-5x-6}$ (C) $\frac{x-2}{x^2-5x-6}$ (D) $\frac{x-2}{x^2+11x+6}$

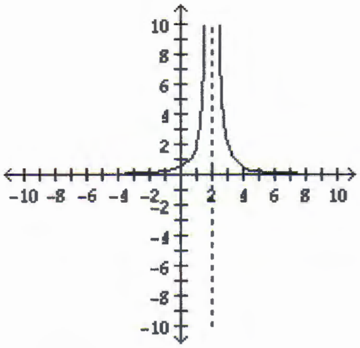
Problem 9: **Solve the equation:** $\frac{-6x+1}{3-x} = 9$

(A) x = -4/3 (B) x = -6 (C) x = 2 (D) x = 26/3

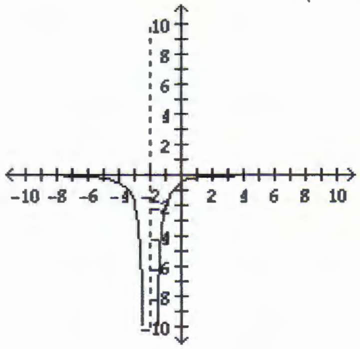
Problem 10: **Graph the function, showing all asymptotes (those that do not correspond to an axis) as dashed lines. List the x- and y-intercepts.**

$$f(x) = \frac{-2}{(x-2)^2}$$

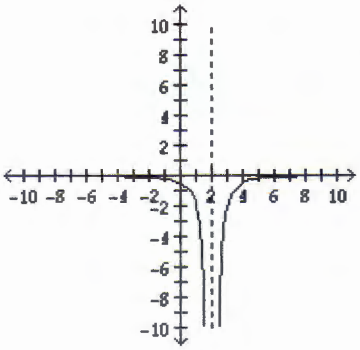
A) No x-intercepts, y-intercept: $\left(0, \frac{1}{2}\right)$;



B) No x-intercepts, y-intercept: $\left(0, -\frac{1}{2}\right)$;



C) No x-intercepts, y-intercept: $\left(0, -\frac{1}{2}\right)$;



D) x-intercept: $\left(\frac{1}{2}, 0\right)$, no y-intercepts;