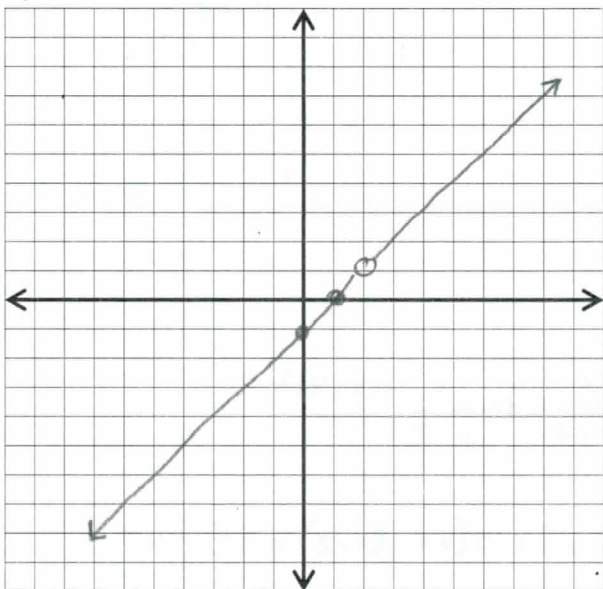


Graph each function and list the domain, equations of asymptotes, coordinates of removable discontinuities, and intercepts.

$$1. g(x) = \frac{x^2 - 3x + 2}{x - 2} = \frac{(x-2)(x-1)}{x-2}$$

R.D. (2,1) = x-1
x-int (1,0)
y-int (0,-1)

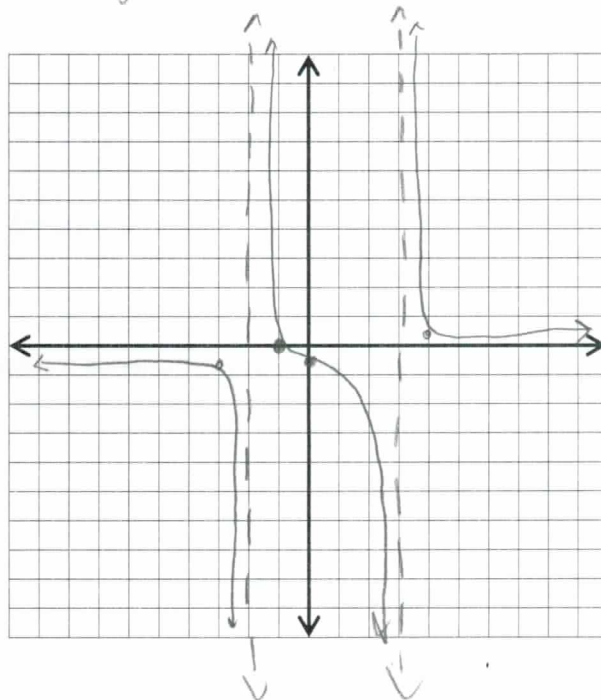


$$2. g(x) = \frac{x+1}{x^2 - x - 6} = \frac{(x+1)}{(x-3)(x+2)}$$

VASY x=3, -2
HASY y=0

x-int (-1,0)
y-int (0,-1/6)

x	y
-3	-2/6
4	5/6



Simplify.

$$3. \frac{x^2 - 2x + 1}{x^3 + x} \cdot \frac{4x^2 + 4}{x^2 + x - 2}$$

$$\frac{(x-1)(x-1)}{x(x^2+1)} \cdot \frac{4(x^2+1)}{(x+2)(x-1)}$$

$$\boxed{\frac{4(x-1)}{x(x+2)}}$$

$$4. \frac{2 - \frac{x+1}{x}}{3 + \frac{x-7}{x+1}} \cdot \frac{(x)(x+1)}{(x)(x+1)} =$$

$$\frac{2(x^2+x) - (x+1)(x+1)}{3(x^2+x) + (x-7)(x)}$$

$$\frac{2x^2+2x - (x^2+2x+1)}{3x^2+3x+x^2-7x} = \frac{2x^2+2x-x^2-2x-1}{4x^2-4x}$$

$$\frac{x^2-1}{4x^2-4x} = \frac{(x+1)(x-1)}{4x(x-1)} = \boxed{\frac{x+1}{4x}}$$

$$5. \frac{(x+1) \frac{x-2}{x-1} - \frac{x-3}{x^2-1}}{(x+1)(x-1)}$$

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

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

$$\frac{x^2 - 2x + 1}{(x+1)(x-1)} = \frac{(x-1)(x-1)}{(x+1)(x-1)} = \boxed{\frac{x-1}{x+1}}$$

Solve each equation. Identify any extraneous solutions.

$$7. \left(\frac{3}{x-2} = \frac{1}{x-1} + \frac{7}{x^2-3x+2} \right) (x-2)(x-1)$$

$$3(x-1) = 1(x-2) + 7$$

$$3x - 3 = x - 2 + 7$$

$$3x - 3 = x + 5$$

$$2x = 8$$

$$\boxed{x = 4}$$

$$6. \frac{-x+11}{x^2+8x+7} + \frac{x-1}{x+1} \frac{(x+7)}{(x+7)}$$

$$\frac{-x+11+x^2+6x-7}{(x+1)(x+7)} = \frac{x^2+5x+4}{(x+1)(x+7)}$$

$$\frac{(x+1)(x+4)}{(x+1)(x+7)} = \boxed{\frac{x+4}{x+7}}$$

$$8. \left(\frac{5}{x+4} = 4 + \frac{3}{x-2} \right) (x+4)(x-2)$$

$$5(x-2) = 4(x+4)(x-2) + 3(x+4)$$

$$5x - 10 = 4(x^2 + 2x - 8) + 3x + 12$$

$$5x - 10 = 4x^2 + 8x - 32 + 3x + 12$$

$$0 = 4x^2 + 6x - 10$$

$$0 = 2(2x^2 + 3x - 5)$$

$$0 = (2x+5)(x-1)$$

$$x = -5/2, 1$$