Inverse Relations :

A. Solve each of the following equations for one positive y:

1. $5x + 3y = -3 \Rightarrow y = \dfrac{-5x - 3}{3}$

2. $3x + 5y = -3 \Rightarrow y = \dfrac{-3x - 3}{5}$

3. $y + x^2 = 6 \Rightarrow y = -x^2 + 6$

4. $x + y^2 = 6 \Rightarrow y = \pm\sqrt{-x + 6}$

5. $3x^2 + 4y^2 = 12 \Rightarrow y = \pm\dfrac{\sqrt{-3x^2 + 12}}{2}$

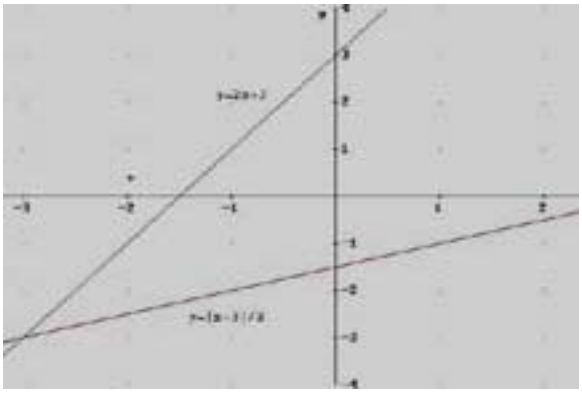
6. $4x^2 + 3y^2 = 12 \Rightarrow y = \pm\sqrt{\dfrac{-4x^2 + 12}{3}}$

7. $y - x^3 = 6 \Rightarrow y = x^3 + 6$

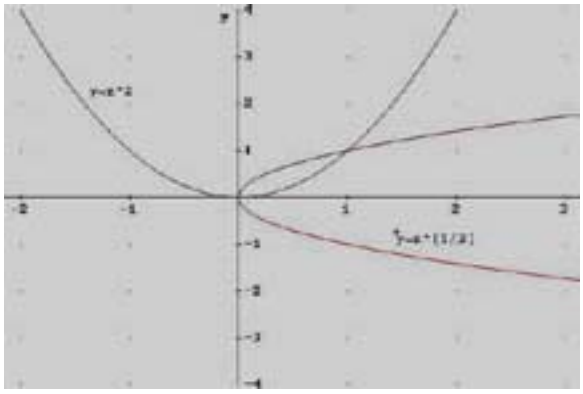
8. $x - y^3 = 6 \Rightarrow y = \sqrt[3]{x - 6}$

B. Graph each pair of equations on the same coordinate plane.

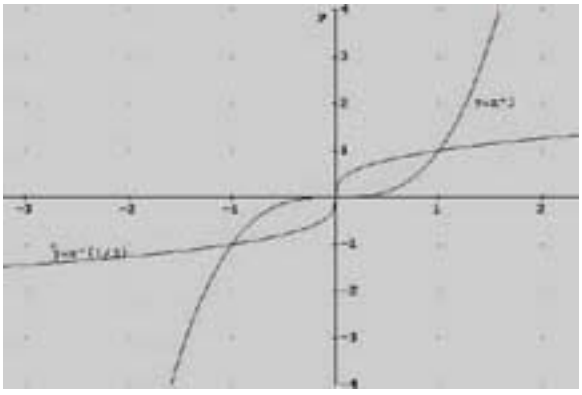
1. $y = 2x + 3,\ y = \dfrac{(x - 3)}{2}$



2. $y = x^2,\ y = \pm\sqrt{x}$



3. $y = x^3,\ y = \sqrt[3]{x}$



4. $y = \dfrac{2x + 7}{x + 3},\ y = \dfrac{-3x + 7}{x - 2}$

Reciprocal Functions

A. Determine the reciprocals of each of the following:

1. $4 \Rightarrow \frac{1}{4}$ 2. $-5 \Rightarrow -\frac{1}{5}$ 3. $\frac{3}{5} \Rightarrow \frac{5}{3}$ 4. $-\frac{7}{3} \Rightarrow -\frac{3}{7}$

5. $x \Rightarrow \frac{1}{x}$ 6. $\frac{2}{x} \Rightarrow \frac{x}{2}$ 7. $(x+3) \Rightarrow \frac{1}{(x+3)}$ 8. $\frac{x}{x-5} \Rightarrow \frac{x-5}{x}$

B. Solve each of the following equations:

1. $(x-2)(x+3)=0 \Rightarrow \{-3,2\}$ 2. $(2x-1)(x+3)(3x+4)=0 \Rightarrow \left\{-3,-\frac{4}{3},\frac{1}{2}\right\}$

3. $x^2-7x+12=0 \Rightarrow \{3,4\}$ 4. $2x^2-7x+3=0 \Rightarrow \left\{\frac{1}{2},3\right\}$

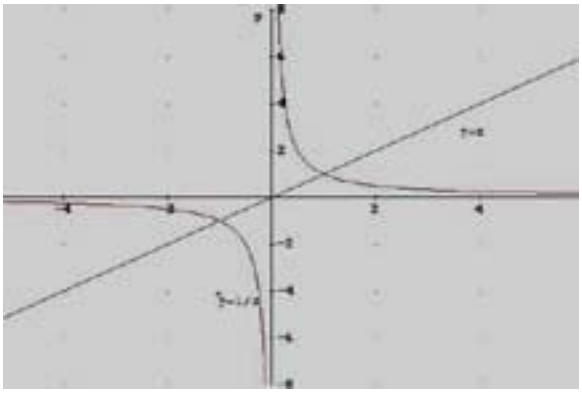
C. Determine the values for which the rational function is undefined

1. $f(x)=y=\frac{x+2}{(x+3)(x-1)} \Rightarrow \{-3,1\}$ 2. $f(x)=y=\frac{2}{2x^2-x-3} \Rightarrow \left\{-1,\frac{3}{2}\right\}$

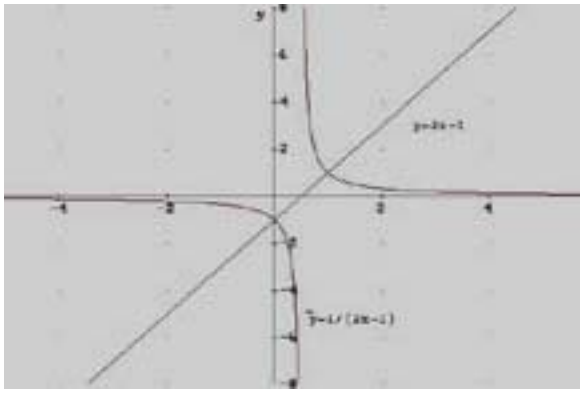
3. $f(x)=y=\frac{x^4-3x^2-5}{x^5-x} \Rightarrow \{-1,0,1\}$ 4. $f(x)=y=\frac{2x^2+5}{x^3-2x^2+x} \Rightarrow \{0,1\}$

D. Graph each pair of functions on the same coordinate plane

1. $y=x,\ y=\frac{1}{x}$



2. $y=2x-1,\ y=\frac{1}{2x-1}$



3. $y=x^2-4,\ y=\frac{1}{x^2-4}$

4. $y=\frac{x}{x+2},\ y=\frac{x+2}{x}$