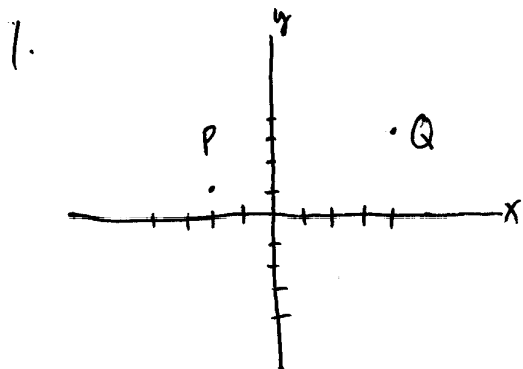


## Exam I-B



$$d(P, Q) = \sqrt{(-2-4)^2 + (1-3)^2} = \sqrt{40} = 2\sqrt{10}$$

$$M = \left( \frac{-2+4}{2}, \frac{1+3}{2} \right) = (1, 2)$$

$$m = \frac{3-1}{4-2} = \frac{2}{2} = 1$$

$$y-3 = 1(x-4)$$

$$3y-9 = x-4$$

$$x-3y+5 = 0$$

2.

$$\begin{cases} 3-5y = 2 \\ -(3-5y) = 2 \end{cases} \quad \begin{matrix} 1 = 5y \\ -3+5y = 2 \end{matrix} \quad \begin{matrix} y = \frac{1}{5} \\ 5y = 5 \\ y = 1 \end{matrix}$$

3.

$$\begin{array}{r} 6x - 8y = -12 \\ 2x + 8y = 4 \\ \hline 8x = -8 \end{array} \quad x = -1 \quad \begin{matrix} -2 + 8y = 4 \\ y = \frac{3}{4} \end{matrix}$$

Solution  $\left\{ (-1, \frac{3}{4}) \right\}$

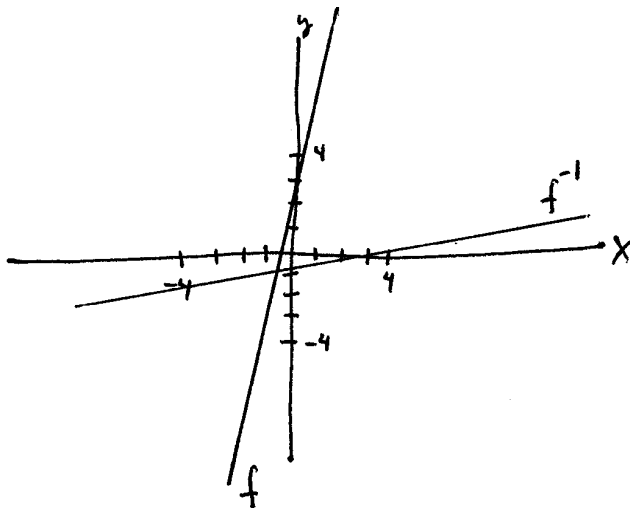
4. Domain  $x^2+x \neq 0$   $x(x+1) \neq 0$   $x \neq 0$  or  $-1$   $(-\infty, -1) \cup (-1, 0) \cup (1, \infty)$

$$f(-2) = 4$$

$$f(-1) \text{ undefined}$$

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

$$5 \quad \begin{aligned} x &= 3+4y \\ x-3 &= 4y \\ y &= \frac{1}{4}x - \frac{3}{4} \end{aligned}$$



$$6. \quad \begin{aligned} \cos^{-1} \frac{1}{2} &= \frac{\pi}{3} \\ \sin(\cos^{-1} \frac{1}{2}) &= \frac{\sqrt{3}}{2} \end{aligned}$$

$$7. \quad \begin{array}{ccc} \begin{array}{c} \sqrt{1+x^2} \\ \text{---} \\ \theta \\ \text{---} \\ 1 \end{array} & \begin{array}{l} \tan^{-1} x = \theta \\ \tan \theta = x \end{array} & \sin(\tan^{-1} x) = \frac{x}{\sqrt{1+x^2}} \end{array}$$

	$c = -1$	$c = 1$	$c = 2$
8 A $f(c)$	undefined	4	1
B $\lim_{x \rightarrow c^-} f(x)$	2	4	1
C $\lim_{x \rightarrow c^+} f(x)$	2	2	1
D $\lim_{x \rightarrow c} f(x)$	2	undefined	1

$$9. \quad A. \quad \lim_{x \rightarrow 2} x^2 - 2x - 7 = 2^2 - 2(2) - 7 = -7$$

$$B. \quad \lim_{x \rightarrow 0} \frac{\sqrt{x+1} - 1}{x} = \lim_{x \rightarrow 0} \frac{(\sqrt{x+1} - 1)(\sqrt{x+1} + 1)}{x(\sqrt{x+1} + 1)} = \lim_{x \rightarrow 0} \frac{x}{x(\sqrt{x+1} + 1)} = \frac{1}{2}$$

$$C. \quad \lim_{x \rightarrow 0} \frac{\sin^2 x}{x \cos x} = \lim_{x \rightarrow 0} \frac{\sin x}{x} \frac{\sin x}{\cos x} = 1 \cdot 0 = 0$$