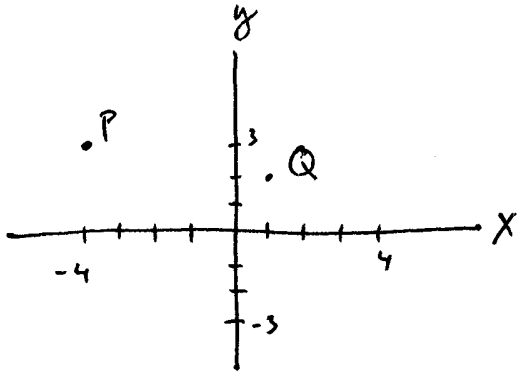
Exam I - A

1.



$d(P,Q) = \sqrt{(-4-1)^2 + (3-2)^2} = \sqrt{26}$

$M = \left(\frac{-4+1}{2}, \frac{3+2}{2}\right) = \left(\frac{-3}{2}, \frac{5}{2}\right)$

$m = \frac{2-3}{1--4} = \frac{-1}{5}$

$y - 2 = -\frac{1}{5}(x-1)$

$5y - 10 = -x + 1$

$x + 5y - 11 = 0$

2. $\begin{cases} 4-3y=5 \\ -(4-3y)=5 \end{cases}$ $\quad -3y = 1 \quad -4+3y=5$ $\quad y = -\frac{1}{3} \quad 3y = 9 \quad y = 3$

3. $4x + 6y = 24$
$-4x + 8y = 18$
$14y = 42$

$y = 3$ $\quad 2x + 9 = 12 \quad 2x = 3 \quad x = \frac{3}{2}$

Solution $\{(\frac{3}{2}, 3)\}$

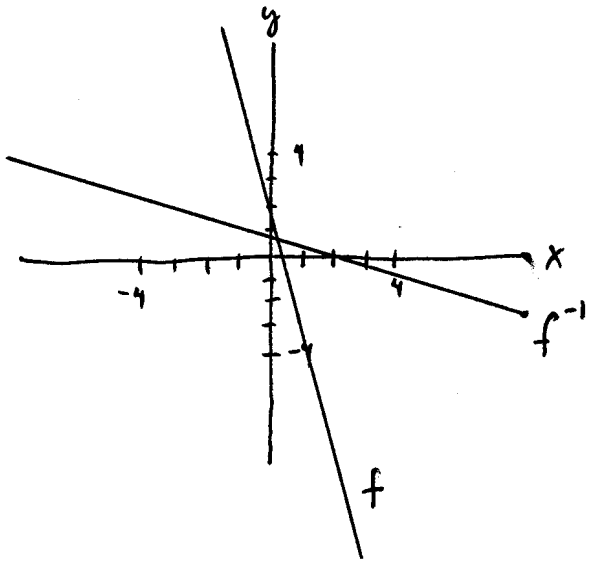
4. Domain $3 + 2x > 0 \quad x > \frac{-3}{2} \quad (-\frac{3}{2}, \infty)$

$f(-2)$ undefined $\quad f(-1) = 1 \quad f(1) = \frac{1}{\sqrt{5}}$

5. $x = 2 - 3y$

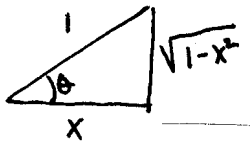
$3y = 2 - x$

$y = -\frac{1}{3}x + \frac{2}{3}$



6. $\sin^{-1}\left(-\frac{1}{2}\right) = -\frac{\pi}{6}$

$\cos\left(\sin^{-1}\frac{1}{2}\right) = \frac{\sqrt{3}}{2}$

7. 

$\cos^{-1} x = \theta$

$\cos\theta = x$

$\tan\left(\cos^{-1} x\right) = \frac{\sqrt{1-x^2}}{x}$

8.

	$c=-1$	$c=1$	$c=2$	
A	3	undefined	4	$f(c)$
B	5	5	4	$\lim_{x\to c^-} f(x)$
C	3	5	4	$\lim_{x\to c^+} f(x)$
D	undefined	5	4	$\lim_{x\to c} f(x)$

9. A $\lim_{x\to 2} \frac{x^2+3x-7}{x^2-3x+1} = \frac{2^2+3(2)-7}{2^2-3(2)+1} = \frac{3}{-1} = -3$

B $\lim_{x\to -2} \frac{4-x^2}{2+x} = \lim_{x\to -2} \frac{(2-x)\cancel{(2+x)}}{\cancel{2+x}} = \lim_{x\to -2} 2-x = 4$

C $\lim_{x\to 0} \frac{\sin 4x}{9x} = \lim_{x\to 0} \frac{4}{9}\,\frac{\sin 4x}{4x} = \frac{4}{9}\cdot 1 = \frac{4}{9}$