- 1. Determine whether the function $f = \{(1,3), (2,5), (-3,6), (4,3)\}$ is invertible. If not, remove points so that it is. In either case, write out the inverse.
- (1) Not invertible because of (1,3) and (4.3). f $f = \{(1,3), (2,5), (-3,6)\}$ is invertible and $(f^*)^{-1} = \{(3,1), (5,2), (6,-3)\}$
 - 2. Take f to be an invertible function with domain (4, 10] and range (-4, 3). Determine the domain and range of the inverse of f.
 - $D(f) = (4,10] \qquad \begin{pmatrix} f & f^{-1} \\ (x,y) \not \Leftrightarrow (y,x) \end{pmatrix} \qquad D(f^{-1}) = (-4,3) \quad domain of f^{-1} \\ R(f) = (-4,3) \qquad \qquad R(f^{-1}) = (4,10] \quad range \quad of \quad f^{-1} \\ \end{array}$
 - 3. Sketch $f|_{(-3,-2)\cup[0,1]}$ where $f(x) = x^2$. Then sketch the inverse of $f|_{(-3,-2)\cup[0,1]}$ and write a formula for it.



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X(2y

2xy -

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- 4. Find the inverse of $f(x) = 3(x-2)^3 + 1$. Determine the domain and range of f and its inverse. () Rewrite in terms of x
 - (2) Inverse is $X = 3(y-2)^3 + 1$ $f^{-1}(x) = \sqrt[3]{\frac{x+1}{3}} + 2$ $X+1 = 3(y-2)^3$ $\begin{array}{l} b(f) = (-\infty, \infty) \\ B(f) = (-\infty, \infty) \end{array} \begin{array}{l} b(f^{-1}) = (-\infty, \infty) \\ B(f^{-1}) = (-\infty, \infty) \end{array} \end{array}$ $\frac{\chi+1}{3}=(\gamma-2)^3$ $\sqrt[3]{x+1} = y-2$ $\sqrt[3]{x+1}}{+2} = 4$

5. Find the inverse of $f(x) = \frac{x-3}{2x+4}$. Determine the domain and range of f and its inverse. (1) Rewrite in terms of x (2) Inverse is

 $f'(x) = \frac{-4x - 3}{2x - 1}$

$$X = \frac{y-3}{2y+4}$$

$$X(2y+4) = y-3$$

$$2xy + 4x = y-3$$

$$2xy - y = -4x-3$$

$$y(2x - 1) = -4x - 3$$

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

 $f(x) = \frac{x-3}{2x+4}$ $f^{-1}(x) = \frac{-4x-3}{2x-1}$ $D(f) = (-\infty, -2) U(-2, \infty) \qquad D(f^{-1}) = (-\infty, \frac{1}{2}) U(\frac{1}{2}, \infty)$ $R(f^{-1}) = (-\infty, \frac{1}{2}) U(\frac{1}{2}, \infty) \qquad R(f^{-1}) = (-\infty, -2) U(-2, \infty)$

6. Find the inverse of $f(x) = \sqrt{x-2} + 1$. Determine the domain and range of f and its inverse.

D Rewrite in terms of x	Inverse i s	natinvertible puless there is a
X=19-2 + 1	$f^{-1}(x) = (x-1)^2 + 2$	l restriction and anne
$x - 1 = \sqrt{y - 2}$	$f(x) = \sqrt{x-2} + 1$	$f'(x) = (x-1)^2 + 2$
$(x-1)^2 = y-2$	D(f) = [2,00)	$D(f) = [1, \infty)$
$(x-1)^2+2=y$	$R(f) = [1, \infty)$	$\mathcal{P}_{\mathcal{R}}(f) = [2, \omega)$

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