

9.2 Notes Inverse Functions

$f(x) = x^2 + 4$

What is the first thing you do when you find an inverse

1. Switch x and y
 $y = x^2 + 4$
 $x = y^2 + 4$
2. solve for y
 $x = y^2 + 4$
 $-4 \quad -4$
 $\sqrt{x-4} = \sqrt{y^2}$
 $y = \pm\sqrt{x-4}$
 $f^{-1}(x) = \pm\sqrt{x-4}$

Apr 7-7:58 AM

$f(x)$

x	y
1	2
-1	3
0	1
4	5

$f^{-1}(x)$

x	y
2	1
3	-1
1	0
5	4

Apr 7-8:06 AM

The graph of an inverse ($f^{-1}(x)$) and the function $f(x)$ reflect across the line $y=x$

Apr 7-8:08 AM

⑦

$(0, -2) \rightarrow (-2, 0)$
 $(2, 1) \rightarrow (1, 2)$
 $(3, 5) \rightarrow (5, 3)$

Apr 7-8:16 AM

② $f(x) = -\frac{1}{2}x - 2$

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

+2 +2

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

$-2x - 4 = y$

$f^{-1}(x) = -2x - 4$

Apr 7-8:17 AM

⑧ $f(x) = \sqrt{2x-5} + 4$

$x = \sqrt{2y-5} + 4$

-4 -4

$(x-4)^2 = (\sqrt{2y-5})^2$

$x^2 - 8x + 16 = 2y - 5$

+5 +5

$\frac{x^2 - 8x + 21}{2} = \frac{2y}{2}$

$f^{-1}(x) = \frac{x^2 - 8x + 21}{2}$

$f^{-1}(x) = \frac{1}{2}x^2 - 4x + \frac{21}{2}$

Apr 7-8:20 AM

(14) $f(x) = \frac{4x-3}{x+4}$

$x = \frac{4y-3}{y+4}$

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

~~$x(y) + 4x = 4y-3$~~ ~~$x(y) + 4x = 4y-3$~~

~~$x(y) + 4x = 4y-3$~~ ~~$3+4x = 4y-x$~~

~~$x(y) + 4x = 4y-3$~~ ~~$3+4x = y(4-x)$~~

~~$x(y) + 4x = 4y-3$~~ ~~$\frac{3+4x}{4-x} = \frac{y(4-x)}{4-x}$~~

~~$x(y) + 4x = 4y-3$~~ ~~$\frac{3+4x}{4-x} = y$~~

~~$x(y) + 4x = 4y-3$~~ ~~$\frac{3+4x}{4-x} = y$~~

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

Apr 7-8:28 AM

(19) $f(x) = -2\sqrt[3]{x-5} + 7$

$\frac{x-7}{-2} = \frac{-2\sqrt[3]{x-5}}{-2}$

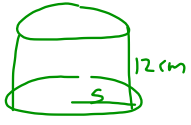
$\left(\frac{x-7}{-2}\right)^3 = \sqrt[3]{x-5}^3$

$\left(\frac{x-7}{-2}\right)^3 = x-5$

$\left(\frac{x-7}{-2}\right)^3 + 5 = f^{-1}(x)$

Apr 7-8:36 AM

Cylinder



Volume = Bh

$B = \text{area of base}$

πr^2

$\pi(s)^2$

25π

$25\pi \cdot 12$

$300\pi \text{ cm}^3$

942.48 cm^3

Apr 7-8:45 AM

Surface Area: $2\pi r^2 + 2\pi rh$

2 bases cylinder

πr^2 $2\pi rh$

$25\pi + 25\pi + 2\pi \cdot 5 \cdot 12$

$50\pi + 120\pi$

170π

534.07 cm^2

Apr 7-8:51 AM