F.BF.B.4: Inverse of Functions 2

1 For the function $d(x) = \sqrt[3]{x+2}$, the inverse function, $d^{-1}(x)$, equals

1) $\sqrt[3]{x+2}$
2) x^3+2
3) $-\sqrt[3]{x+2}$
4) x^3-2

2 Given $f(x) = x^3 - 3$ and $f^{-1}(x) = \sqrt[3]{x-3b}$, the value of b is

1) 1
2) –1
3) 3
4) –3

3 What is the inverse of $f(x) = x^3 - 2$?

1) $f^{-1}(x) = \sqrt[3]{x} + 2$
2) $f^{-1}(x) = \pm\sqrt[3]{x} + 2$
3) $f^{-1}(x) = \sqrt[3]{x+2}$
4) $f^{-1}(x) = \pm\sqrt[3]{x+2}$

4 For the function $f(x) = (x-3)^3 + 1$, find $f^{-1}(x)$.

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Answer Section

1 ANS: 4

$y = \sqrt[3]{x+2}$

$x = \sqrt[3]{y+2}$

$x^3 = y+2$

$y = x^3 - 2$

REF: 062419aii

2 ANS: 2

$y = x^3 - 3$

$x = y^3 - 3$

$x+3 = y^3$

$\sqrt[3]{x+3} = y$

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3 ANS: 3

$y = x^3 - 2$

$x = y^3 - 2$

$x+2 = y^3$

$\sqrt[3]{x+2} = y$

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4 ANS:

$x = (y-3)^3 + 1$

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

$\sqrt[3]{x-1} = y-3$

$\sqrt[3]{x-1} + 3 = y$

$f^{-1}(x) = \sqrt[3]{x-1} + 3$

REF: fall1509aii