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

1 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

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

3 If $f(x) = x^2 - 6$, find $f^{-1}(x)$.

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

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Answer Section

1 ANS: 2

$y = x^3 - 3$

$x = y^3 - 3$

$x + 3 = y^3$

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

REF: 012419aii

2 ANS: 3

$y = x^3 - 2$

$x = y^3 - 2$

$x + 2 = y^3$

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

REF: 061815aii

3 ANS:

$y = x^2 - 6$. $f^{-1}(x)$ is not a function.

$x = y^2 - 6$

$x + 6 = y^2$

$\pm\sqrt{x+6} = y$

REF: 061132a2

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