2.8: (One-to-One Functions and Their Inverses)

If $f^{-1}(x) = \frac{ax+b}{cx+d}$ is the invesre function of $f(x) = \frac{4x+3}{1-x}$ then $a+b+c+d =$ A) 3 B) 9 C) 5 D) 2 E) 7	1-1 and Inverse Functions.
If $f(x) = 1 - \sqrt{x+2}$ and $f^{-1}(x) = x^2 + ax + b, x \leq 1$, then $a+b =$ A) -3 B) 2 C) 4 D) -4 E) 0	1-1 and Inverse Functions.
If $f^{-1}(x) = \sqrt{x+a} + b$ is the inverse function of $f(x) = x^2 - 2x, x \geq 1$, then $a+b =$ A) 2 B) -2 C) 0 D) 1 E) -1	1-1 and Inverse Functions.
Which one of the following is one-to-one function? (a) $f(x) = 2x - \sqrt{x}, x \geqslant 0$ (b) $f(x) = 5$ (c) $f(x) = \lvert x-3 \rvert, x \geqslant 1$ (d) $f(x) = \frac{2}{x^2}$ (e) $f(x) = \sqrt{4-x^2}, \ -2 \leqslant x \leqslant 2$	1-1 and Inverse Functions.

Which one of the following statements is FALSE? A) If $f = \{(-1,2),(2,1),(5,-1)\}$, then $f^{-1} = \{(2,-1),(1,2),(-1,2)\}$. B) If f is a one to one function, then $g(x) = f(x) + 5$ is a one to one function. C) If f is a one to one function then f^{-1} is a one to one function. D) If $f(x) = x^2$ for all $x < 0$, then the range of f^{-1} is $(-\infty, 0)$. E) If $f(x) = x + 1$, then the domain of f^{-1} is $(-\infty, \infty)$.	1-1 and Inverse Functions.
If $f(x) = x^2 - 4x, x \geq 2$, then the inverse of f is A) $f^{-1}(x) = 2 - \sqrt{x+4}, x \geq -4$ B) $f^{-1}(x) = 2 + \sqrt{x+4}, x \geq -4$ C) $f^{-1}(x) = 4 + \sqrt{x+2}, x \geq -2$ D) $f^{-1}(x) = 4 - \sqrt{x+2}, x \geq -2$ E) $f^{-1}(x) = 2 + \sqrt{x-4}, x \geq 4$	1-1 and Inverse Functions.
Which one of the following statements is FALSE about the function $f(x) = 2 + \sqrt{x}$? A) The domain of f is $[0, \infty)$. B) The rang of f is $[2, \infty)$. C) $f^{-1}(1)$ is undefined. D) $(f^{-1} \circ f)(-4) = -4$. E) The function f is one-to- one.	1-1 and Inverse Functions.
If $f(x) = \frac{1}{x-1}, x \neq 1$, and $f^{-1}(x) = \frac{ax+b}{x}$, then $a + b =$ A) 1 B) -1 C) 2 D) 0 E) -2	1-1 and Inverse Functions.
If $f(x) = ax + b,\ g(x) = 3x + 2$, and $g(x) = 2f^{-1}(x)$, then $a \cdot b$ is equal to:	1-1 and Inverse Functions.

A) $-\frac{4}{9}$ B) $\frac{4}{9}$ C) 3 D) 1 E) -3	
If $f(x) = -\sqrt{x+2} + k$, and $f^{-1}(2) = 7$, then $f^{-1}(3) + (f^{-1} \circ f)(2) =$ A) 4 B) $\frac{5}{2}$ C) $\frac{11}{5}$ D) 0 E) 8	1-1 and Inverse Functions.
If $f(x) = x^2 + 2; x < 0$, then $(f^{-1} \circ f)(-1) + f^{-1}(6) =$ A) -3 B) 3 C) $\sqrt{5}$ D) $2\sqrt{3}$ E) 9	1-1 and Inverse Functions.
If $\mathrm{h(x)} = (\mathrm{g} \circ \mathrm{f})(\mathrm{x})$ where $\mathrm{f(x)} = \frac{3}{\mathrm{x}-3}$ and $\mathrm{g(x)} = \frac{2}{\mathrm{x}}$, then $\mathrm{h}^{-1}(\mathrm{x}) =$ A) $\frac{3}{2}\mathrm{x} + 3$ B) $\frac{3}{2}\mathrm{x} - 3$ C) $\frac{3\mathrm{x}+2}{3\mathrm{x}}$ D) $\frac{3\mathrm{x}-2}{3\mathrm{x}}$ E) $\frac{3}{\mathrm{x}-3}$	1-1 and Inverse Functions.
Which one of the following statements is FALSE about the inverse functions? A) If $f(2) = -5$, then $f(f^{-1}(-5)) = 2$ B) For a function to have an inverse, it must be a one-to-one function. C) If the point (a, b) lies on the graph of f, then (b, a) lies on the graph of f^{-1}	1-1 and Inverse Functions.

D) The domain of f is equal to the range of f^{-1} E) The graphs of f and f^{-1} are symmetric with respect to the line $\mathrm{y} = \mathrm{x}$.	
Which one of the following statements is FALSE ? A) The function $f(x) = x^2 + 1, x < 1$, is a one to one function. B) If $f(x) = 2^x$ then $f^{-1}(x) = \log_2 x$. C) If $f(x) = x$ then $f^{-1}(x) = x$. D) $f(x) = 5$ is NOT a one to one function. E) If f is a one to one function, then f^{-1} exists.	1-1 and Inverse Functions.
If $f(x) = \frac{x-3}{x+4}, x \neq -4$ and $f^{-1}(x) = \frac{ax+b}{cx+1}$, then $a + b + c =$ A) 6 B) -6 C) 0 D) -8 E) 8	1-1 and Inverse Functions.
If $f(x) = \frac{1}{x+2}, x \neq -2$, then the graph of $f^{-1}(x)$ lies below the x-axis over the interval A) $(-\infty, 0) \cup (1/2, \infty)$ B) $(-\infty, 0) \cup (0, \infty)$ C) $(-\infty, -2) \cup (-2, \infty)$ D) $(-\infty, -2) \cup (0, \infty)$ E) $(-\infty, 0) \cup (2, \infty)$	1-1 and Inverse Functions.

If $f(x) = -\sqrt{x^2 - 16}$, for $x \geq 4$, then the inverse function is A) $f^{-1}(x) = \sqrt{x^2 + 16}$, for $x \leq 0$. B) $f^{-1}(x) = \sqrt{x^2 - 16}$, for $x \geq 0$. C) $f^{-1}(x) = \sqrt{x - 4}$, for $x \geq 4$. D) $f^{-1}(x) = \sqrt{x + 4}$, for $x \geq -4$. E) $f^{-1}(x) = \sqrt{x^2 + 16}$, for $-4 \leq x \leq 4$.	1-1 and Inverse Functions.
Which one of the following statements is FALSE? A) If $f(x) = x^2$, then $f^{-1}(x) = \sqrt{x}$. B) The function $f(x) = 3$, defined over the set of real numbers is not one-to-one. C) The range of the function f is equal to the domain of f^{-1}. D) An increasing function on its entire domain is one-to-one. E) If the point (a, b) lies on the graph of f, then the point (b, a) lies on the graph of f^{-1}.	1-1 and Inverse Functions.
If $f(x) = \frac{2x+1}{x-1}, x \neq 1$, then $f^{-1}(x)$ equals to A) $\frac{x+1}{x-2}, x \neq 2$ B) $\frac{x+1}{x+2}, x \neq -2$ C) $\frac{x-1}{x-2}, x \neq 2$ D) $\frac{x-1}{x+2}, x \neq -2$ E) $\frac{x-1}{2x+1}, x \neq -\frac{1}{2}$	1-1 and Inverse Functions.

Which one of the following functions is NOT one - to - one function? A) $f(x) = \|x-1\|+2$ B) $f(x) = x^3 - 6$ C) $f(x) = x^2 - 4,\ 0 \le x < \infty$ D) $f(x) = 3x - 5$ E) $f(x) = -\frac{2}{x+3}$	1-1 and Inverse Functions.
If $f^{-1}(x) = -\sqrt{x+9}, x \ge -9$, then the graph of f lies below the x-axis on the interval A) $[0,\infty)$ B) $(-9,0]$ C) $(-3,0]$ D) $(3,\infty)$ E) $(-\infty,0]$	1-1 and Inverse Functions.
If $f^{-1}(x) = \frac{1}{2} - \sqrt{x+\frac{5}{4}}$, then $f\left(-\frac{1}{2}\right)$ is equal to A) $-\frac{1}{4}$ B) $-\frac{9}{4}$ C) $\frac{9}{4}$ D) $\frac{1-\sqrt{3}}{2}$ E) $-\frac{5}{4}$	1-1 and Inverse Functions.

Which one of the following functions is NOT a one-to-one function? A) $f(x) = \sqrt{(x-2)^2}, x \geq 0$ B) $f(x) = 2 - \sqrt{2x-1}$ C) $f(x) = \frac{1}{x-1} + 3$ D) $f(x) = x^2 - 2x + 1; x \leq 1$ E) $f(x) = (x-1)^3$	1-1 and Inverse Functions.
Given the function $f(x) = -\sqrt{16-x^2}, 0 \leq x \leq 4$, then the domain of $f^{-1}(x)$ is: A) $[-4,0]$ B) $[-4,4]$ C) $[0,4]$ D) $[4,\infty)$ E) $(-\infty,-4]$	1-1 and Inverse Functions.
If $f(x) = -\|x-3\| + 2, x \leq 3$, then the domain of the inverse function f^{-1} is A) $(-\infty, 2]$ B) $[2,\infty)$ C) $[3,\infty)$ D) $(-\infty,\infty)$ E) $(-\infty, 3]$	1-1 and Inverse Functions.

If $f(x) = a^{x+b}$, where $f^{-1}(1) = 4$ and $f^{-1}(3) = 5$, then $f(2) =$ A) $\frac{1}{9}$ B) 9 C) 3 D) $\frac{1}{3}$ E) -4	1-1 and Inverse Functions.