



## Advanced Math

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1) c 2) b 3) a 4) d

$$12) F(g(x)) = F(x+5) = (x+5)-5 = x$$

$$g(F(x)) = g(x-5) = (x-5)+5 = x$$

$$14) F(g(x)) = F\left(\frac{3-x}{4}\right) = 3-4\left(\frac{3-x}{4}\right) = 3-3+x = x$$

$$g(F(x)) = g(3x-4) = \frac{3-(3-4x)}{4} = \frac{3-3+4x}{4} = \frac{4x}{4} = x$$

$$16) F(g(x)) = F\left(\frac{1}{x}\right) = \frac{1}{\frac{1}{x}} = x$$

$$g(F(x)) = g\left(\frac{1}{x}\right) = \frac{1}{\frac{1}{x}} = x$$

$$18) F(g(x)) = F(\sqrt[3]{1-x}) = 1-(\sqrt[3]{1-x})^3 = 1-(1-x) = x$$

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

$$20) F(g(x)) = F\left(\frac{1-x}{x}\right) = \frac{1}{1+\frac{1-x}{x}} = \frac{1}{\frac{x+1-x}{x}} = \frac{1}{\frac{1}{x}} = x$$

$$g(F(x)) = g\left(\frac{1}{1+x}\right) = \frac{1-\frac{1}{1+x}}{\frac{1}{1+x}} = \frac{\frac{1+x-1}{1+x}}{\frac{1}{1+x}} = \frac{\frac{x}{1+x}}{\frac{1}{1+x}} = \frac{x}{1+x} \cdot \frac{1+x}{1} = x$$

24) Inverse is not a function

28) No

32) No

26) Inverse is a function

30) Yes

34)  $F^{-1}(x) = \frac{x}{3}$

36)  $F^{-1}(x) = \sqrt[3]{x-1}$

38)  $F^{-1}(x) = \sqrt{x}$

40)  $F^{-1}(x) = \frac{4}{x}$

42)  $F^{-1}(x) = x^{5/3}$

44)  $\pm\sqrt{\frac{1}{x}}$ , Not a function

46)  $F^{-1}(x) = \frac{x-5}{3}$

48)  $F^{-1}(x) = \frac{5x-4}{3}$

50)  $5 \pm \sqrt{x}$  Not a function52)  $z \pm x$ , but since  $D: (-\infty, 2]$   
 $F^{-1}(x) = 2-x$ , Yes function  
because  $D: (0, \infty)$ ,  $R: (-\infty, 2]$ 54)  $F(x) = x^2 + 2, x > 0$   
Function56)  $y = \frac{x^2}{x^2+1} \Rightarrow x = \frac{y^2}{y^2+1} \Rightarrow y^2 + x = y^2 \Rightarrow$   
 $x = y^2 - y^2 \Rightarrow x = y^2(1-x) \Rightarrow \frac{x}{1-x} = y^2$   
 $y = \pm\sqrt{\frac{x}{1-x}}$ , Not a function.58)  $F^{-1}(x) = \frac{x-b}{a}, a \neq 0$   
FunctionFor 70-74,  $F^{-1}(x) = R(x+3)$ 

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

70) 0 72)  $\sqrt[9]{4}$ 

74)  $\sqrt[3]{8(x+3)} = 2\sqrt[3]{x+3}$

For 76-78,  $F^{-1}(x) = x-4$   $g^{-1}(x) = \frac{x+5}{2}$ ,  $g(F(x)) = 2x+3$ 

76)  $F(g^{-1}(x)) = F\left(\frac{x+5}{2}\right) = \frac{x+5}{2} - 4 = \frac{x+5-8}{2} = \frac{x-3}{2}$

78)  $[g(F(x))]^{-1} = \frac{x-3}{2}$

81) inverse:  $y = .03x^2 + 245.50$

$$y - 245.50 = .03x^2$$

$$x - 245.50 = .03y^2$$

$$\frac{x - 245.50}{.03} = y^2$$

$$\pm \sqrt{\frac{x - 245.50}{.03}} = y$$

$$y = \% \text{ load}$$
$$x = \text{degrees } ^\circ F$$

c)

92.10% Load

~~-92.10 % load~~ Doesn't make sense.