

Use the functions below to answer the given questions:

$a(x) = 5x - 2$

$b(x) = x^2 + 1$

$c(x) = 4 - 7x$

$d(x) = -2x + 1$

1. Find $(a \circ b)(x)$

$$\begin{aligned} a(b(x)) &= 5(x^2 + 1) - 2 \\ &= 5x^2 + 5 - 2 \\ &= \boxed{5x^2 + 3} \checkmark \end{aligned}$$

2. Find $(b \circ d)(x)$

$$\begin{aligned} b(d(x)) &= (-2x + 1)^2 + 1 \\ &= 4x^2 - 4x + 1 + 1 \\ &= \boxed{4x^2 - 4x + 2} \checkmark \end{aligned}$$

3. Find $(d \circ a)(-3)$

$$\begin{aligned} a(-3) &= 5(-3) - 2 = -15 - 2 = -17 \\ d(a(-3)) &= d(-17) = -2(-17) + 1 = 34 + 1 = \boxed{35} \checkmark \end{aligned}$$

4. Find $(b \circ c)(3)$

$$\begin{aligned} c(3) &= 4 - 7(3) = 4 - 21 = -17 \\ b(c(3)) &= b(-17) \\ &= (-17)^2 + 1 \\ &= 289 + 1 \\ &= \boxed{290} \checkmark \end{aligned}$$

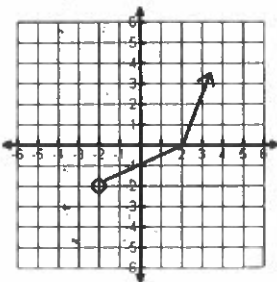
5. Find $(c \circ a)(x)$

$$\begin{aligned} c(a(x)) &= 4 - 7(5x - 2) \\ &= 4 - 35x + 14 \\ &= \boxed{-35x + 18} \checkmark \end{aligned}$$

6. Find $(d \circ b)(4)$

$$\begin{aligned} b(4) &= 4^2 + 1 = 16 + 1 = 17 \\ d(b(4)) &= d(17) \\ &= -2(17) + 1 \\ &= -34 + 1 \\ &= \boxed{-33} \checkmark \end{aligned}$$

7. Graph Given, Find

Domain? $(-2, \infty)$ Range $(-2, \infty)$ Function? yesAll x values have only 1 y -value. VLTV

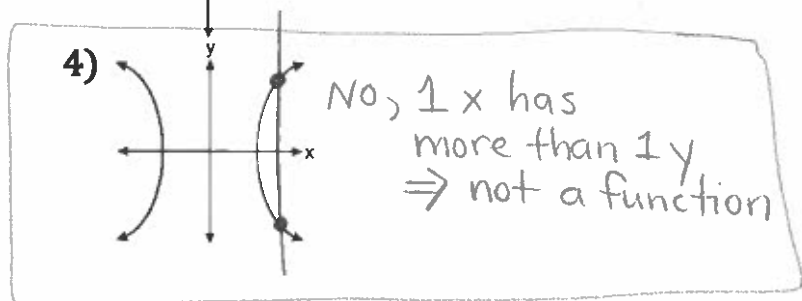
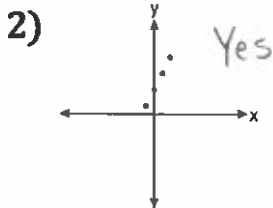
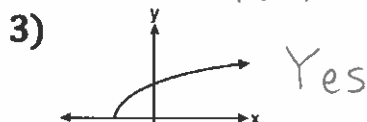
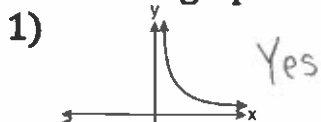
8. If $f(x) = 5x - 2$ Find $f(3)$, $f(a)$, $f(x+2)$

$$f(3) = 5(3) - 2 = 15 - 2 = \boxed{13} \checkmark$$

$$f(a) = 5(a) - 2 = \boxed{5a - 2} \checkmark$$

$$f(x+2) = 5(x+2) - 2 = 5x + 10 - 2 = \boxed{5x + 8} \checkmark$$

9. Which graph does *not* represent a function? VLT



10. Which set of ordered pairs represents a function?

1) $\{(0, 4), (2, 4), (2, 5)\}$ No

3) $\{(4, 1), (6, 2), (6, 3), (5, 0)\}$ No

2) $\{(6, 0), (5, 0), (4, 0)\}$ Yes

4) $\{(0, 4), (1, 4), (0, 5), (1, 5)\}$ No

each x-value has one y-value