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1.2.2

$$(a) f(5) = 5-4$$

$$(b) f(3) = 3 - 4$$

$$\frac{2}{3} \cdot \frac{9}{1} = 2x^2 = 10$$

(a)
$$g(2) = 2(2)^2 - 10$$

= $2(4) - 10$

$$=8-10$$

$$= -2$$

(b)
$$g(-2) = 2(-2)^2 - 10$$

= $8 - 10$

$$(c) g(x) = 8$$

$$270^2 - 10 = 8$$

$$\Rightarrow 70^2 = 18 = 9$$

$$\Rightarrow x = \pm 3$$

$$3. f(x) = 3x - 5$$

$$f(3) = 3(3) - 5 = 9 - 5 = 4$$

$$f(-2) = 3(-2) - 5 = -6 - 5$$

$$(r)$$
 $f(x)=1$

$$\Rightarrow 3 \times -5 = 1$$

$$\Rightarrow 3x = 6 - 12 - 12 = 1$$

$$\frac{3}{1} \cdot (1 + 1) \cdot (3) = \frac{1}{1}$$

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2 in terms

$$f(10) = (10)^2 - 3$$

$$= 100 - 3$$

$$(b) f(-1)$$

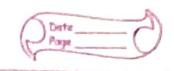
$$f(-1) = (-1)^2 - 3$$

5.
$$f(x) = 2x - 4$$
 $g(x) = 3x + 5$

(a)
$$gf(x) = 3(2x-4)+5 = 6x - 12+5$$

= $6x - 7$

$$gf(3) = 6(3)-7 = 18-7 = 11$$



$$(1) f(x) = g(x)$$

$$\Rightarrow 2x - 4 = 3x + 5$$

$$\Rightarrow 2x - 3x = 5 + 4$$

$$\Rightarrow -\chi = 9$$

$$\Rightarrow \chi = -9$$

6.
$$f(x)=3x+1$$
 and $g(x)=x^2$

(a)
$$f(g(x)) = 3(x^2) + 1 = 3x^2 + 1$$

(b)
$$g(f(x)) = (3x+1)^2 = 9x^2+1+6x$$

$$(c) f(g(x)) = g(f(x))$$

$$\Rightarrow$$
 $3x^2+1 = 9x^2+6x+1$

$$\Rightarrow 6x^2 + 6x = 0$$

$$\Rightarrow x^2 + x = 0$$

$$\Rightarrow x^2 = -x$$

$$\Rightarrow \chi = -1$$

=
$$f(x)=x^2-11$$
 and $g(x)=x+3$

$$\underline{\underline{(a)}}$$
 $g \cdot \underline{l(x)}$

x interms of y

(c)
$$f^{-1}(r) = g^{-1}(\gamma)$$

$$75\sqrt{\chi+17} = \chi-3$$

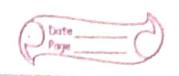
$$\Rightarrow x+17=(x-3)^2$$

$$\Rightarrow x+17=x^2+9-6x$$

$$\Rightarrow 0 = x^2 + 9 - 6x - x - 17$$

$$\Rightarrow \chi^2 - 7\chi - 8 = 0$$

$$y = x^2 - 17$$



8. A function of is defined such that
$$f(x) = x^2 - 1$$

(a) find an expression for :
$$f(x-2)$$

$$-f(x-2) = (x-2)^2 - 1$$

$$= x^2 + 2 - 4 - 1 = x^2 - 3$$

$$\chi^2 = 3 = 0$$

$$\Rightarrow \chi^2 = 3$$

$$\Rightarrow x = \pm \sqrt{3}$$

$$9 \qquad f(x) = 4x - 1$$

Experience (6.3)

$$f_{9(2)}=12$$

$$f(g(x) = 4(kx^{2}) - 1$$

$$= 4kx^{2} - 1$$

$$f(g(2)) = 4k(4) - 1$$

$$= 16k - 1$$

$$\Rightarrow 16k = 13 \Rightarrow k = 13$$