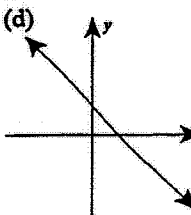
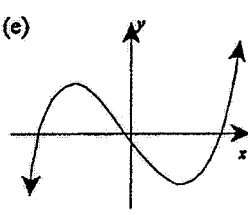
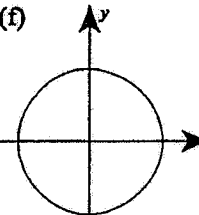
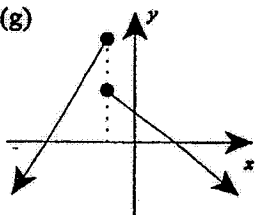


1. Write down the domain and range of each relation:

- (a)  $\{(1, 3), (3, 0), (5, 4)\}$       (b)  $\{(1, 1), (2, 1), (3, 1)\}$

2. State whether each relation is a FUNCTION or NOT A FUNCTION:

- (a)  $\{(1, 1), (2, 2), (3, 3)\}$       (b)  $\{(1, 2), (2, 3), (1, 4)\}$       (c)  $\{(3, 2), (4, 3), (5, 3)\}$

<p>(d) </p>	<p>(e) </p>	<p>(f) </p>	<p>(g) </p>
<p>(h) <math>y = 2x^2</math></p>	<p>(i) <math>x = y^2</math></p>	<p>(j) <math>y = 2</math></p>	<p>(k) <math>x = 1</math></p>

3.

If  $f(x) = 2x^2 - 1$ , evaluate

- |                        |            |              |
|------------------------|------------|--------------|
| (a) $f(0)$             | (b) $f(3)$ | (c) $f(-2)$  |
| (d) $3f(1) - [f(2)]^2$ | (e) $f(a)$ | (f) $f(x+1)$ |

4.

If  $g(x) = 2^x + \frac{1}{x-1}$ ,

(a) evaluate

- |            |                            |
|------------|----------------------------|
| (i) $g(0)$ | (ii) $g(-4)$ as a fraction |
|------------|----------------------------|

(b) For what value of  $x$  does  $g(x)$  not exist?

5.

If  $f(x) = x^2 + 1$  and  $g(x) = 2x - 3$ , evaluate

(a) $f[g(0)]$	(b) $g[f(0)]$
simplify (c) $f[g(x)]$	(d) $g[f(x)]$

6.

Evaluate  $h(3)$  if

(a) $h(x) = 5 - x$	(b) $h(x) = \sqrt{25 - x^2}$	(c) $h(x) = 6x$
(d) $h(x) = 6$	(e) $h(x) =  x $	

(f)  $h(x) = |2x - 1| - |3 - 5x|$

7.

If  $f(x) = 3x - 2$ , solve

(a) $f(x) = 0$	(b) $f(x) = x + 1$	(c) $f(x) < 1$
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8.

If  $P(x) = x^2 - x - 2$ , solve

(a) $P(x) = 0$	(b) $P(x) = 4$
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9.

If  $A(x) = 2x^2 + 7x - 4$  and  $B(x) = 2x - 1$ , solve  $A(x) = B(x)$ .

10.

If  $f(x) = 2^x$ , for what value of  $x$  does  $f(x) = \frac{1}{4}$ ?

11.

If  $f(x) = \begin{cases} 1 - x & \text{if } x < 3 \\ x^2 + 2 & \text{if } x \geq 3 \end{cases}$  evaluate

(a)  $f(-5)$ (b)  $f(3)$ (c)  $f(5)$ 

12.

If  $f(x) = \begin{cases} x^2 - 1 & \text{if } x \leq -4 \\ 6 & \text{if } -4 < x < 0 \\ 5x & \text{if } x \geq 0 \end{cases}$  evaluate

(a)  $f(-6)$ (b)  $f(-2)$ (c)  $f(-4) + f(2)$ (d)  $f(a^2)$ 

13.

If  $f(x) = x^2 + x$ , simplify fully  $\frac{f(x+h) - f(x)}{h}$ .

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**14.**

If  $g(x) = x^2 - x - 1$ , for what value(s) of  $x$  does  $g(x) = g(-x)$  ?

**15.**

If  $f(x) = ax + b$ ,  $f(3) = 2$ , and  $f(4) = 4$ , find  $a$  and  $b$ .

**ANSWERS:**

1. (a)  $D=\{1, 3, 5\}$ ,  $R=\{0, 3, 4\}$  (b)  $D=\{1, 2, 3\}$ ,  $R=\{1\}$
2. (a) F (b) NF (c) F (d) F (e) F  
(f) NF (g) NF (h) F (i) NF (j) F (k) NF
3.  
(a) -1 (b) 17 (c) 7 (d) -46  
(e)  $2a^2 - 1$  (f)  $2x^2 + 4x + 1$
4.  
(a) (i) 0 (ii)  $-\frac{11}{80}$  (b)  $x = 1$
5.  
(a) 10 (b) -1 (c)  $4x^2 - 12x + 10$  (d)  $2x^2 - 1$
6.  
(a) 2 (b) 4 (c) 18 (d) 6  
(e) 3 (f) -7
7.  
(a)  $x = \frac{2}{3}$  (b)  $x = 1\frac{1}{2}$  (c)  $x < 1$
8.  
(a)  $x = 2, -1$  (b)  $x = 3, -2$
9.  
 $x = -3, \frac{1}{2}$
10.  
 $x = -2$
11.  
(a) 6 (b) 11 (c) 27
12.  
(a) 35 (b) 6 (c) 25 (d)  $5a^2$
13.  
 $2x + h + 1$
14.  
 $x = 0$
15.  
 $a = 2, b = -4$