Subject:

No:

Date: 25/03/2019

Revision Set 2

$f(x) = 2x - 1$

$g(x) = 3x$

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

(a) $f(x+1) = 2(x+1) - 1$

$= 2x + 2 - 1$

$= 2x + 1$ ✓

(b) $(g.h)(24)$

$(g.h)(x) = g[h(x)]$

$= g(x^2+1)$

$= 3(x^2+1)$ ✓

$(g.h)(24) = 3x^2 + 3$

$= 3(24)^2 + 3$

$= 1731$ ✓

(c) $g(3a) = 3(3a)$

$= 9a$ ✓

2. a) $f(x) = \frac{-3}{x-3}$

let $y = \frac{-3}{x-3}$

$y(x-3) = -3$

$xy - 3y = -3$

$xy = -3 + 3y$

$\frac{xy}{y} = \frac{-3+3y}{y}$

$x = \frac{-3+3y}{y}$ ✓

$f(x)^{-1} = \frac{-3+3x}{x}, \quad x \neq 0$

24/3/19.

2. b) $g(x) = \frac{12 - 3x}{4}$

let $y = \frac{12 - 3x}{4}$

$4y = 12 - 3x$

$3x = 12 - 4y$

$\frac{3x}{3} = \frac{12 - 4y}{3}$

$x = \frac{12 - 4y}{3}$

$g(x)^{-1} = \frac{12 - 4y}{3}$ ✓

3. a) $\lfloor -3.4 \rfloor \times \lceil 2.81 \rceil$

$= -4 \times 3$

$= -12$ ✓

b) $\lceil \lfloor -0.82 \rfloor \times 0.3 \rceil$

$= \lceil -1 \times 0.3 \rceil$

$= \lceil -0.3 \rceil$ ✓

$= 0$

$\lceil \lfloor -2.2 \times 0.3 \rfloor + (-1.78) \rceil$

$= \lceil \lfloor -0.66 \rfloor + (-1.78) \rceil$

$= \lceil -1 + (-1.78) \rceil$

$= \lceil -2.78 \rceil$ ✓

$= -2$

No:

Date:

4. P : {11, 12, 13, 14, 15}
Q : {10, 12, 14, 16, 18}
R : {7, 9, 11, 14, 18, 20}

(a) Q - R = {10, 12, 16}
In Q not in R

(b) R - P = {7, 9, 18, 20}

5. {0, 1, 2}
(a) {(0,0), (1,1), (2,2)}

Reflexive
- all the elements loop to itself

Symmetric
- all the elements whenever aRb, then bRa

Transitive
- all the elements whenever aRb, bRa then aRa.

∴ R is equivalence relation since it is reflexive, symmetric and transitive.

(b) {(0,0), (1,1), (2,2), (0,1), (1,2)}

Reflexive
- all element loop to itself since (0,0), (1,1), (2,2).

Symmetric
- R is not symmetric since (0,1) in the relation but (1,0) not in the relation.

Transitive
- R is not Transitive since (0,1) and (1,2) in R but (0,2) not in R. $0R_1$, $1R_2$ but $0R_2$

∴ R is not equivalence relation since R is reflexive but not symmetric and not transitive.