

Chapter 8 Practice Test

Name:

Your Work:

1) Determine if each relation is a function. If it is, list domain and range.

a) $\{(1, 12), (2, 100), (3, 17), (4, -6)\}$

b) $\{(13, 14), (15, 16), (13, 18)\}$

2) For $g(x) = 3x^2 - 5x + 2$, find:

a) $g(0)$

b) $g(5)$

c) $g(-4)$

d) $g(a)$

e) $g(4b)$

FOLD IN HALF LENGTHWISE.

Solutions

a) Yes

$$D = \{1, 2, 3, 4\}$$

$$R = \{-6, 12, 17, 100\}$$

b) No

2) a) $g(0) = 3 \cdot 0^2 - 5 \cdot 0 + 2$

$$= 0 - 0 + 2 = 2$$

b) $g(5) = 3 \cdot 5^2 - 5 \cdot 5 + 2$

$$= 3 \cdot 25 - 25 + 2$$

$$= 75 - 25 + 2 = 52$$

c) $g(-4) = 3(-4)^2 - 5(-4) + 2$

$$= 3 \cdot 16 + 20 + 2$$

$$= 48 + 20 + 2 = 70$$

d) $g(a) = 3 \cdot a^2 - 5 \cdot a + 2$

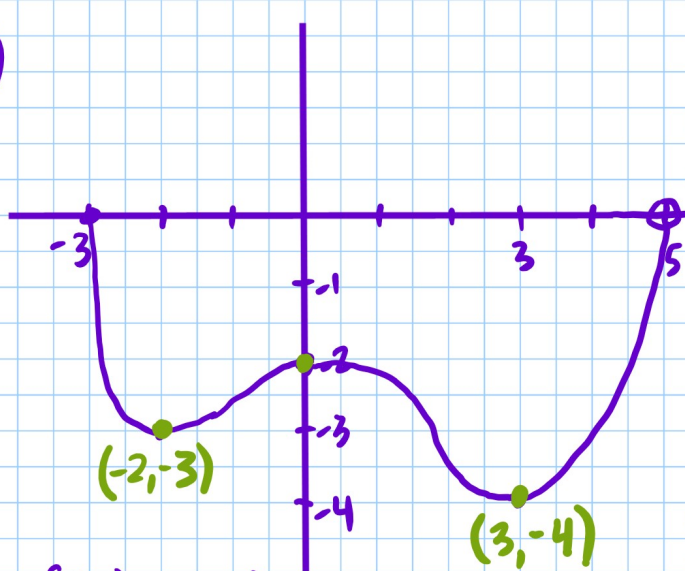
$$= 3a^2 - 5a + 2$$

e) $g(4b) = 3(4b)^2 - 5(4b) + 2$

$$= 3 \cdot 16b^2 - 20b + 2$$

$$= 48b^2 - 20b + 2$$

3)



- a) $f(-2) =$ b) $f(0) =$
 c) For what value of x is $f(x) = -4$?!
 d) Domain =
 Range =

a) $f(-2) = -3$

b) $f(0) = -2$

c) $x = 3$

d) $D = [-3, 5]$

$R = [-4, 0]$

4) Find the domain of each function.

a) $f(x) = 7x - 3$

b) $g(x) = \frac{4}{x+8}$

a) $D = (-\infty, \infty)$

b) $x + 8 \neq 0$
 $x \neq -8$

$D = (-\infty, -8) \cup (-8, \infty)$

5) Find a) $(f+g)(x)$ and

b) $(f+g)(3)$

for $f(x) = 5x^2 - x + 4$ and

$g(x) = x - 3$

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

$= 5x^2 - \cancel{x} + 4 + \cancel{x} - 3$

$= 5x^2 + 1$

b) $(f+g)(3) = 5 \cdot 3^2 + 1$

$= 5 \cdot 9 + 1$

$= 46$

6) Given $f(x) = x^2 - 2x$ and
 $g(x) = x - 5$, find:

a) $(f+g)(-2)$

a) $(f+g)(-2) = f(-2) + g(-2)$

$= [(-2)^2 - 2(-2)] + [-2 - 5]$

$= 4 + 4 + (-7) = 1$

$$b) (f-g)(x)$$

$$c) f(4) - g(4)$$

$$d) (fg)(x)$$

$$e) \left(\frac{f}{g}\right)(7)$$

$$f) \left(\frac{g}{f}\right)(-3)$$

$$b) (f-g)(x) = (x^2 - 2x) - (x - 5)$$

$$= x^2 - 2x - x + 5$$

$$= x^2 - 3x + 5$$

$$c) f(4) - g(4) = (4^2 - 2 \cdot 4) - (4 - 5)$$

$$= (16 - 8) - (-1)$$

$$= 8 + 1$$

$$= 9$$

$$d) (fg)(x) = (x^2 - 2x)(x - 5)$$

$$= x^3 - 5x^2 - 2x^2 + 10x$$

$$= x^3 - 7x^2 + 10x$$

$$e) \left(\frac{f}{g}\right)(7) = \frac{f(7)}{g(7)} = \frac{7^2 - 2 \cdot 7}{7 - 5} = \frac{49 - 14}{2}$$

$$= \frac{35}{2}$$

$$f) \left(\frac{g}{f}\right)(-3) = \frac{g(-3)}{f(-3)} = \frac{-3 - 5}{(-3)^2 - 2(-3)}$$

$$= \frac{-8}{9 + 6} = \frac{-8}{15}$$

7) Given $f(x) = x^2 + 3$ and $g(x) = 4x - 1$, find:

$$a) (f \circ g)(x)$$

$$b) (g \circ f)(x)$$

$$c) (f \circ g)(3)$$