Name: _____ Period:_____ Date:_____

2.2 Practice Problems

Find the domain and range for the following relation.

1. $\{(-3, -7), (-1, -3), (0, -1), (2, 3), (4, 7)\}$

$D: \{-3, -1, 0, 2, 4\}$ $R: \{-7, -3, -1, 3, 7\}$

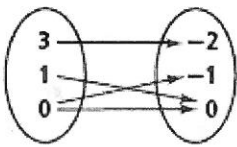Determine whether each of the following relations/graphs is a function.

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

3. $\left\{(-4, -3), (-2, -2), (0, -1), \left(1, -\frac{1}{2}\right)\right\}$ Yes
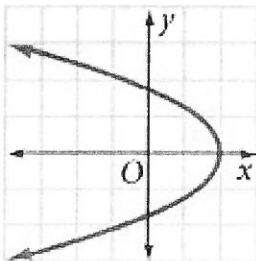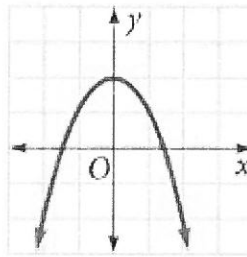
4.

  No

5.

  No

6.

  Yes

7. A store bought a case of disposable cameras for $300. The stores profit p on the cameras is a function of the number c of cameras sold. Find the range of the function $p = 6c - 300$, when the domain is $\{0,15,50,62\}$.

$P = \{-300, -210, 0, 72\}$

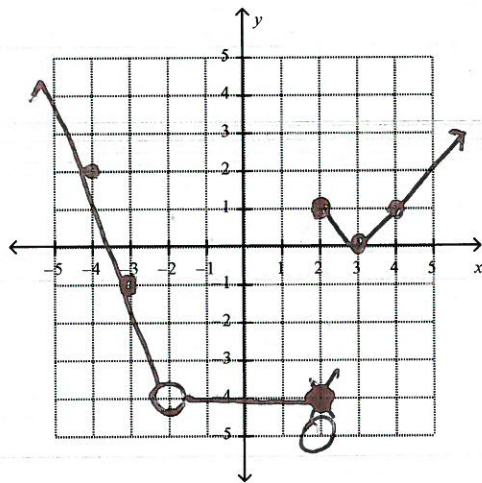Find the difference quotient $\dfrac{f(x+h)-f(x)}{h}$ for each function.

8. $f(x) = x^2+5x+6$

$f(x+h) = (x+h)^2 + 5(x+h) + 6$
$\qquad\quad x^2 + 2xh + h^2 + 5x + 5h + 6$

$\dfrac{x^2+2xh+h^2+5x+5h+6 - (x^2+5x+6)}{h}$

$\dfrac{2xh+h^2+5h}{h} = \boxed{h+5+2x}$

9. $f(x) = 2x^2-7x+11$

$f(x+h) = 2(x+h)^2 - 7(x+h) + 11$
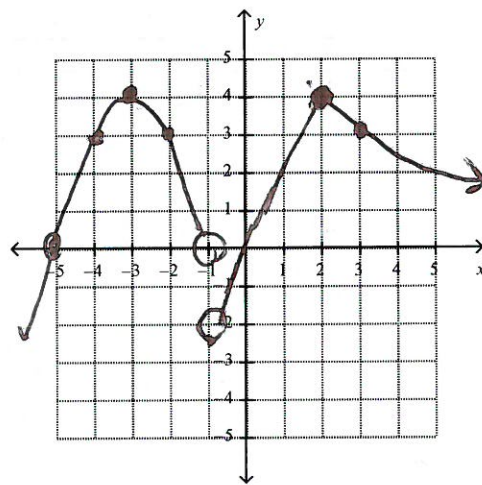$\dfrac{2x^2+4xh+2h^2-7x - 7h +11 - 2x^2 + 7x - 11}{h}$

$\boxed{4x+2h-7}$

10. Graph the piecewise function f(x).

$$f(x) = \begin{cases} -3x-10 & x < -2 \\ -4 & -2 < x < 2 \\ |x-3| & 2 \le x \end{cases}$$

11. Graph the piecewise function f(x).

$$f(x) = \begin{cases} -(x+3)^2 + 4 & x < -1 \\ 2x & -1 < x < 2 \\ 4 - \sqrt{x-2} & 2 \le x \end{cases}$$

12. Given the function s(t) = -16t²+10t+9, evaluate:

a. s(-1) $= -17$

d. c. s(t+2) $-16(t+2)^2 + 10(t+2)+9$
$= -16(t^2+4t+4)+10t+20+9$
$-16t^2 - 54t + 35$

b. s(2) $= -64 + 29$
-35

e. s(2t - 3)
$-16(2t-3)^2 + 10(2t-3)+9$
$-16(4t^2-12t+9)+20t-30+9$
$-64t^2 + 192t - 144 + 20t - 21$
$-64t^2 + 212t - 165$

13. Find the domain of g(x).

a. g(x) = $\frac{x-1}{x+1}$

$X \neq -1$

b. g(x) = $\sqrt{2-x}$

$2 - x \ge 0$
$2 \ge x$