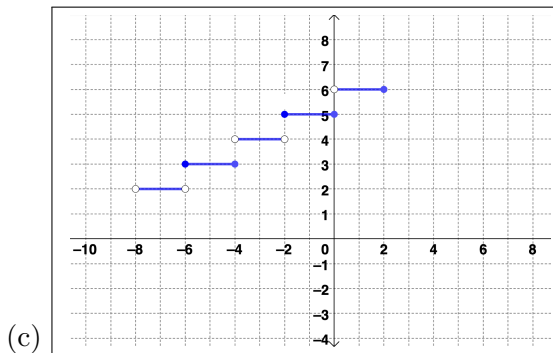
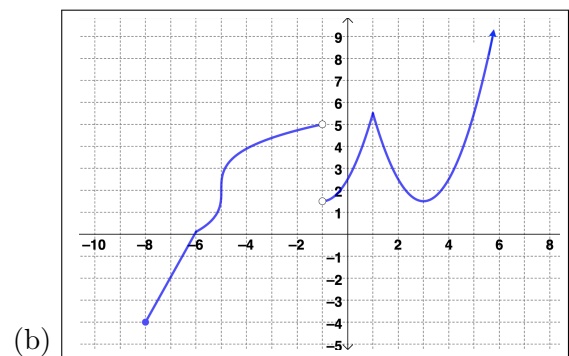
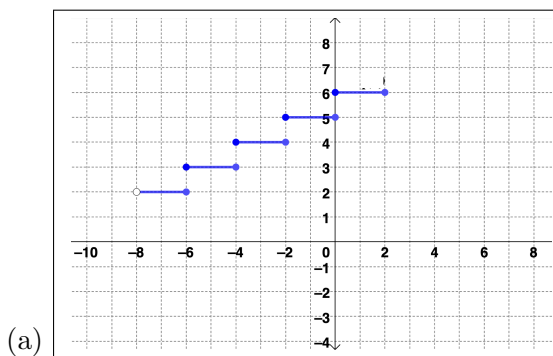




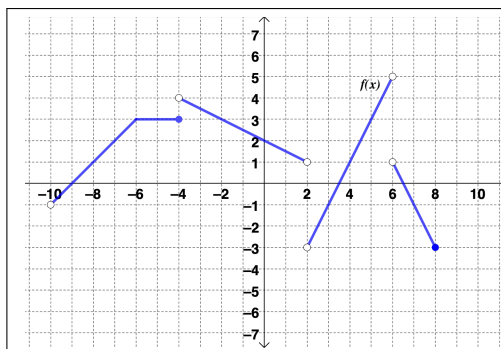
WIR: Sections 5.1 and 5.2

Section 5.1

- (1) Express  $\{x|x \leq 2 \text{ or } -8 < x \leq 10, \text{ but } x \neq 0\}$  in the equivalent interval notation.
- (2) For the graphs below, state the domain, the range, and whether the relation is a function or not.



- (3) A graph of  $f(x)$  is shown below. Use the graph to
  - (a) find  $f(-4)$ .
  - (b) find  $f(2)$ .
  - (c) determine all values of  $x$  where  $f(x) = 3$  and  $f(x) = 1$ .





- (4) Use the function  $g(x) = -2x^2 + 4x + 6$  to find the following:
- (a)  $g(-1)$
  - (b)  $g(1)$
  - (c)  $g(a + b)$
  - (d)  $g(x + h)$
  - (e)  $g(x + h) - g(x)$

### Section 5.2

- (5) Determine whether each function below is a polynomial. If it is a polynomial state the degree, leading term, leading coefficient, and constant term.
- (a)  $g(x) = -2x^3 + 4x^{1/2}$
  - (b)  $h(x) = 6x + \pi - 8x^4 + 12x^3 - \sqrt{2}x^2$
  - (c)  $p(x) = \frac{1}{2}x(x - 2)(x + 3)$
- (6) For the polynomials below determine the (a) end behaviors, (b) real zeros, (c) domain, and (d)  $y$ -intercept.
- (a)  $k(x) = \frac{1}{3}(x - 3)^2(x + 1)(x - 2)$
  - (b)  $p(x) = -\frac{1}{3}(x - 3)^2(x + 1)^2(x - 2)$
  - (c)  $g(x) = 4(x + 5)^2 - 64$
  - (d)  $f(x) = x^3 + x^2 - 6x$
  - (e)  $h(x) = -5x^2 - 10x + 17$
- (7) Examine the functions below and determine which are quadratics. For the quadratic functions, (a) find the vertex, (b) axis of symmetry, (c) range, and (d) maximum or minimum value (whichever exists).
- (a)  $k(x) = \frac{1}{3}(x - 3)^2(x + 1)(x - 2)$
  - (b)  $p(x) = -\frac{1}{3}(x - 3)^2(x + 1)^2(x - 2)$
  - (c)  $g(x) = 4(x + 5)^2 - 64$
  - (d)  $f(x) = x^3 + x^2 - 6x$
  - (e)  $h(x) = -5x^2 - 10x + 17$
- (8) A company's revenue function (in dollars) is given by  $R(x) = -x^2 + 1250x$  where  $x$  is the number of items sold and the company's cost function (in dollars) is given by  $C(x) = 390x + 170500$  where  $x$  is the number of items produced. Find
- (a) The number of items sold when revenue is maximized.
  - (b) The maximum revenue.
  - (c) The number of items sold when profit is maximized.
  - (d) The maximum profit.
  - (e) The break-even quantity/quantities, if they exist.