

Section 2.1

Q1. If $f(x) = 3x - 5$. Find $\frac{f(x)-f(a)}{x-a}$ and simplify

Fall 24-25 

Q2. Consider the piecewise defined function

Summer 22-23 

$$f(x) = \begin{cases} \sqrt{9-x^2} & \text{if } -2 \leq x \leq 2 \\ x^2 + x + 1 & \text{if } x > 3 \end{cases}$$

Evaluate $2f(0) + f(4) - 7$

Q3. Find the domain of $f(x) = \frac{\sqrt{36-x^2}}{x-6}$

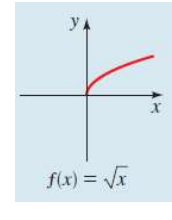
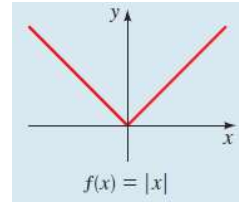
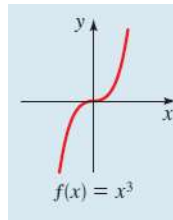
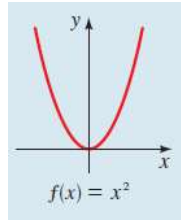
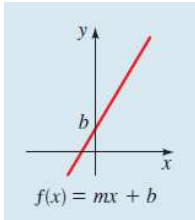
Fall 22-23 

Q4. Find the domain of $f(x) = \sqrt{x-1} - \frac{1}{\sqrt{2-x}}$

Spring 22-23 

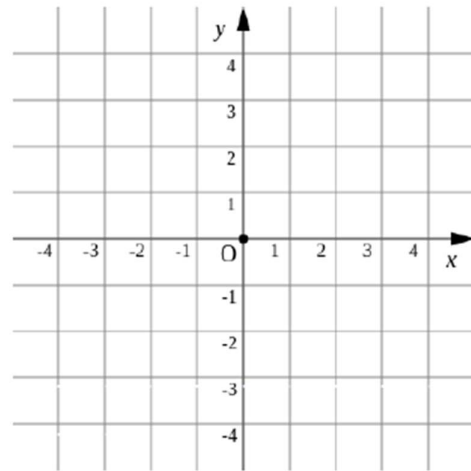
Q5. Find the domain $f(x) = 5x^2 + 4$, $0 \leq x \leq 2$

Section 2.2

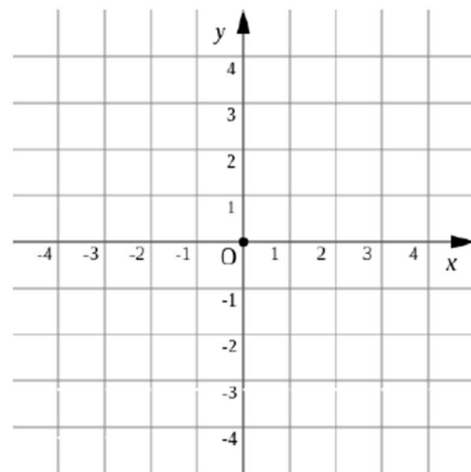


Q1. Sketch graphs of the following functions

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



b) $h(x) = -x^2$



Q2. Determine whether the equation defines y as a function of x

Summer 24-25 

$$x^2 - y - 6 = 1$$

Q3. Determine whether the equation $\sqrt{x} - y^2 = 5$ defines y as a function of x .

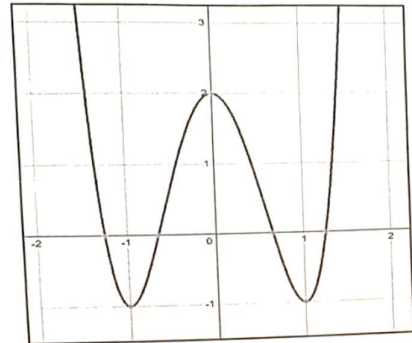
Spring 22-23 

Section 2.3

Q1. Given the graph of function f , find:

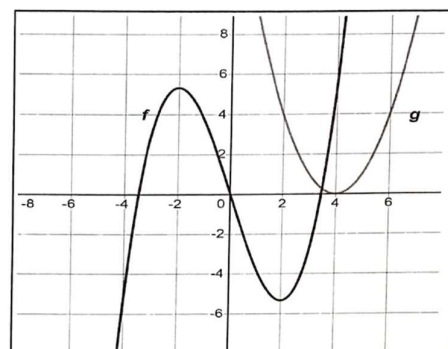
Fall 24-25 

1. a) Local maximum
b) The value(s) of x at which the local maximum occurs
2. a) Local minimum
b) The value(s) of x at which the local minimum occurs
3. a) Domain of $f(x)$
b) Range of $f(x)$
4. a) Intervals for $f(x)$ increasing
b) Intervals for $f(x)$ decreasing
5. a) Find $f^{-1}(2)$
b) Find $f(-1)$

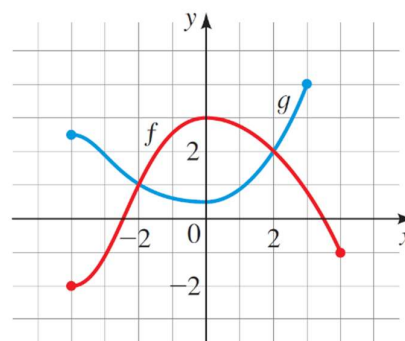


Spring 22-23 Q2. The graphs of f and g are given

- a) Find the interval on which f is decreasing
- b) Find the local minimum value of g
- c) Find the value of x at which f has a local maximum
- d) Determine whether f is even, odd or neither
- e) Is g one-to-one?

Q3. Graphs of the functions f and g are given.

- (a) Which is larger, $f(0)$ or $g(0)$?
- (b) Which is larger, $f(-3)$ or $g(-3)$?
- (c) For which values of x is $f(x) = g(x)$?
- (d) Find the values of x for which $f(x) \leq g(x)$.
- (e) Find the values of x for which $f(x) > g(x)$.

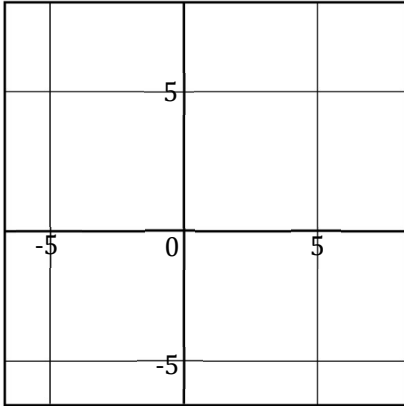


Section 2.6

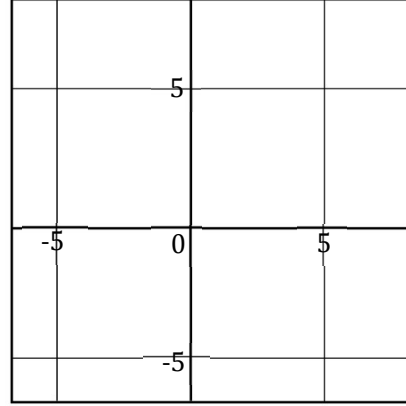
Q1. Sketch the graph of each of the following functions:

Fall 24-25 

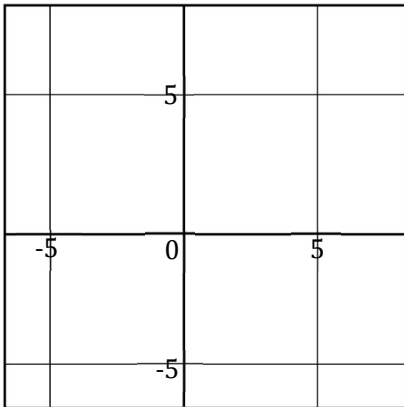
a. $f(x) = \sqrt{x}$



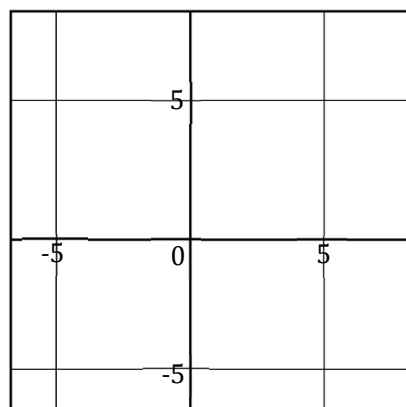
b. $f(x) = \sqrt{x - 4}$



c. $f(x) = \sqrt{x - 4} + 3$



d. $f(x) = -\sqrt{x - 4} + 3$



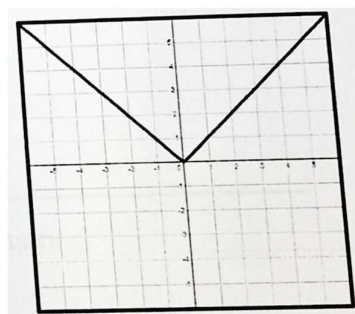
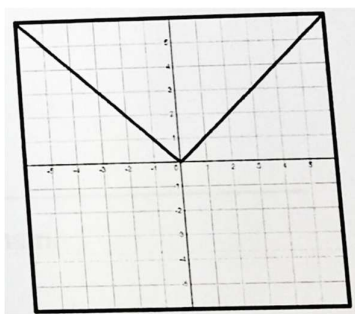
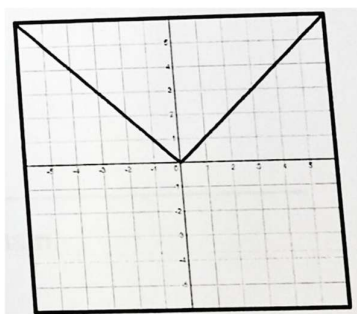
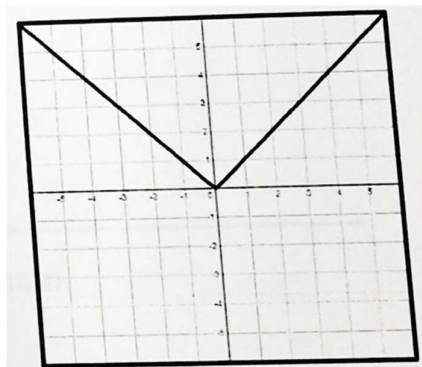
Q2. The graph of $f(x) = |x|$ is given on the right. Sketch the graph of each of the following functions:

Fall 22-23 

a. $f(x) = |x - 4|$

b. $f(x) = |x - 4| + 3$

c. $f(x) = -|x - 4| + 3$



Q3. Determine whether the function $f(x) = x^3 - x$ is even, odd, or neither. Fall 23-24 

Section 2.7

Q1. Let $f(x) = x - 2$, $g(x) = x^2 - 4$. Evaluate the following:

Summer 24-25 

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

b. $(f \cdot g)(1)$

Q2. Let $f(x) = x^2 - 1$ and $g(x) = \sqrt{x + 4}$, find

Fall 23-24 

i. $(f \circ g)(x)$

ii. $g(f(1))$

Q3. Evaluate the following using the table.

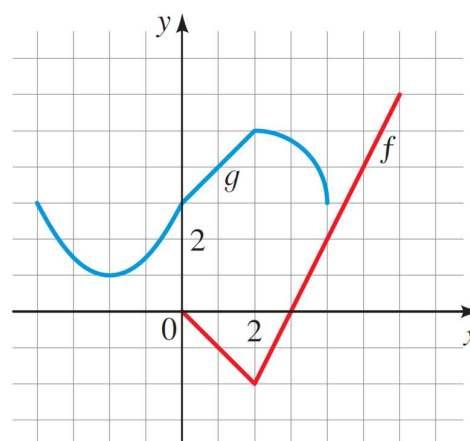
Summer 24-25 

x	-1	1	2	3	4
$f(x)$	0	2	3	4	5
$g(x)$	2	2	5	10	17

- $f^{-1}(0)$
- $(g \circ f)(3)$
- $(f \circ g)(1)$
- $2f(2) - g(-1)$
- $f(f^{-1}(4))$

Q4. Use the given graphs of f and g to evaluate the expression.

- $f(g(2))$
- $(g \circ f)(4)$
- $(g \circ g)(-2)$



Section 2.8

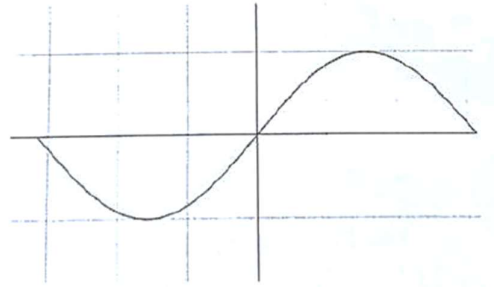
Q1. Determine whether the function $f(x) = -2x + 4$ is one-to-one

Fall 23-24 

Q2. From the following graph

Fall 24-25 

a) Determine whether the graph represents the graph of a function



b) Determine whether $f(x)$ is one-to-one or not

Q3. Find the inverse of the function $f(x) = \frac{x+1}{x-2}$. Find the domain and the range of $f(x)$.

Fall 24-25 

Q4. Let $f(x) = 3x^7 + 2$. Find $f^{-1}(x)$ and its domain.

Fall 22-23 

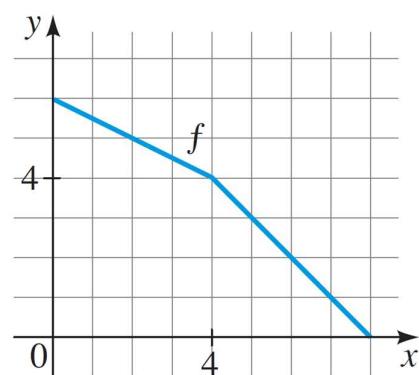
Q5. A graph of a function is given.

Use the graph to find the indicated values.

(a) $f^{-1}(2)$

(b) $f^{-1}(5)$

(c) $f^{-1}(6)$



Q6. A table of values for a one-to-one function is given.

x	1	2	3	4	5	6
$f(x)$	4	6	2	5	0	1

Find:

(a) $f^{-1}(2)$

(b) $f^{-1}(0)$

Section 3.3

Q1. Use long division to divide $P(x) = 27x^3 + 9x^2 - 3x - 9$ by $D(x) = 3x - 2$ and write the result in the form $\frac{P(x)}{D(x)} = Q(x) + \frac{R(x)}{D(x)}$

Spring 22-23 

Q2. For the two polynomials $P(x) = -x^3 - 2x + 6$ and $D(x) = x + 1$ are given. Use either synthetic or long division to divide $P(x)$ by $D(x)$

Q3. Find the remainder of dividing $f(x) = x^{1001} + x^{50} + 100$ by $x - 1$

Fall 24-25 

Q4. Which of the following is a factor of $P(x) = x^3 - 5x^2 - 8x + 12$?

Fall 22-23 

(a) $x + 1$

(b) $x + 2$

(c) $x + 4$

(d) $x - 3$

Q5. Find a polynomial of degree 4 that has zeros $-3, 0, 2$, and 6 , and the coefficient of x^4 is 2 .

Fall 22-23 

Section 3.4

Q1. Given $P(x) = x^3 - 6x^2 + 11x - 6$

Fall 24-25 

a) Find all possible zeros.

b) Factor $P(x)$ completely.

c) Find all zeros.

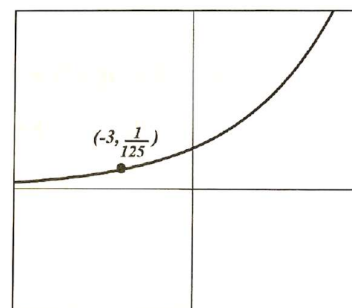
Q2. Find all zeros of $P(x) = 2x^3 + x^2 - 7x - 6$

Fall 22-23 

Section 4.1, 4.2

Q1. Write the exponential function whose graph is given.

Fall 22-23 



Q2. Find the range of $f(x) = 8^{5x+1}$

Fall 22-23 

(a) $(8, \infty)$

(b) $\left(\frac{8}{5}, \infty\right)$

(c) $(0, \infty)$

(d) $\left(\frac{5}{8}, \infty\right)$

Q3. Find the range of:

(a) $y = e^{x+1}$

(b) $y = e^x - 2$