

**SUMMER ASSIGNMENT – Part 2**  
Multiple Choice Section

**Directions:** Please read questions carefully. It is recommended that you do the Short Answer Section prior to doing the Multiple Choice.

**Show all work on this packet. If no work is required, EXPLAIN how you arrived at your answer. Follow calculator instructions as given in each section.**

\* A choice of “none” is short for “none of these”. A choice of DNE means “does not exist”.

These problems are due the first day of class. On the first day of class you will have a short amount of time to ask questions before turning these packets in. Do not expect there to be time in class for ALL questions to be resolved. **You are responsible for understanding all of the material in this packet.**

**NO CALCULATOR**

**Lines and functions**

- Determine the slope of the line that passes through the points (-1, 6) and (11, -6).  
a) 1                      b) -1                      c) 0                      d)  $\frac{6}{5}$
- Find the equation of the line that passes through the point (1, -1) and has a slope of -3.  
a)  $y = -3x - 2$                       b)  $y = -3x + 2$                       c)  $y = -3x - 1$   
d)  $y = -3x + 4$                       e) none of these
- Determine which points lie on the vertical line that contains the point (5, 1).  
a) (5, 0)                                      b) (0, 1)                                      c) (1, 5)  
d) all of these                                      e) none of these
- What is the slope of the line parallel to the line  $7x - 2y = 12$ ?  
a)  $\frac{7}{2}$                       b)  $-\frac{7}{2}$                       c)  $\frac{2}{7}$                       d) -6
- Find an equation of the line that passes through (-1, -3) parallel to the line  $2x + y = 19$ .  
a)  $y = -2x - 3$                                       b)  $y = -2x - 5$                                       c)  $y = 2x - 1$   
d)  $y = -\frac{1}{2}x - \frac{7}{2}$                                       e) none of these
- Find an equation of the line that passes through (8, 17) and is perpendicular to the line  $x + 2y = 2$ .

7) Given  $A = \{1, 2, 3\}$  and  $B = \{-2, -1, 0, 1\}$ , determine which of the sets of ordered pairs represents a function from A to B.

- a)  $\{(1, -2), (2, -2), (3, -1), (2, 0), (2, 1)\}$       b)  $\{(1, -2), (2, -1), (2, 0), (3, 1)\}$   
c)  $\{(1, -2), (2, -1), (3, 0), (1, 1)\}$       d) all of these      e) none of these

8) Which of the following **does not** represent y as a function of x?

- a)  $3x^2 + 4y = 8$       b)  $3x - 2y = 0$       c)  $3x^3 + y = 0$   
d)  $3x + 4y^2 = 8$       e)  $x^2 - y = 16$

9) Given  $f(x) = 6 - 2x^2$ , find  $f(-3)$ .

- a) 12      b) 24      c) -12      d) -24      e) none

10) Given  $f(x) = \begin{cases} x^2 + 1, & x < 4 \\ 6x - 7, & x \geq 4 \end{cases}$  find  $f(-2)$ .

- a) -19      b) 5      c) 4      d) -5      e) none

11) Given  $f(x) = 6$  and  $g(x) = 2x^2 - 1$ , find  $f(x) - g(x)$ .

- a)  $2x^2 + 5$       b)  $2x^2 - 7$       c)  $-2x^2 + 7$       d)  $-2x^2 + 5$       e) none

12) Given  $f(x) = x^2$  and  $g(x) = x + 5$ , find  $g(f(x))$ .

- a)  $(x + 5)^2$       b)  $x^2 + 5$       c)  $x^2 + 25$       d)  $x^2 + 5x^2$       e) none

13) Given  $f(x) = x$  and  $g(x) = x^2 - 7$ , find  $f(3)g(3)$ .

- a) -13      b) 29      c) 5      d) 6      e) none

14) Given  $f(x) = x^2 - 2x$  and  $g(x) = 2x + 3$ , find  $f(g(x))$ .

a)  $4x^2 + 8x + 3$

b)  $2x^2 - 4x + 3$

c)  $2x^3 - x^2 - 6x$

d)  $3x^2 + x$

e) none of these

15) Given  $f(x) = x^2$  and  $g(x) = \sqrt{x-6}$ , find  $f(g(-1))$ .16) If  $f(x) = \frac{1}{2}x$ , find  $\frac{f(x+h) - f(x)}{h}$ .

a) 2

b)  $\frac{1}{2}$

c)  $\frac{x + \frac{1}{2}h}{h}$

d) 1

e) none

17) Is the function  $f(x) = 2x^3 + 3x^2$  even, odd, or neither? Show why.18) If  $f$  is a one-to-one function on its domain, the graph  $f^{-1}(x)$  is a reflection of the graph of  $f(x)$  with respect to:

a) the x-axis

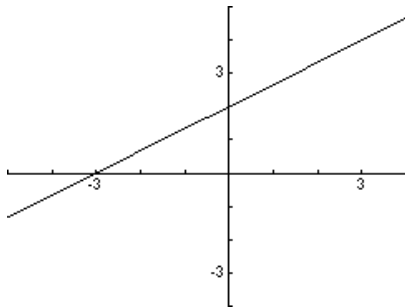
b) the y-axis

c)  $y = x$ d)  $y = -x$ 

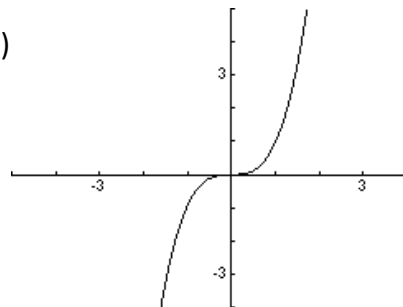
e) none

19) In which graph does  $y$  not represent a one-to-one function of  $x$ ?

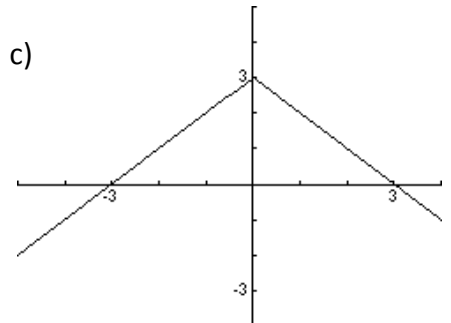
a)



b)



c)

d) All of these are one-to-one functions of  $x$ .e) None of these are one-to-one function of  $x$ .20) Given  $f(x) = 3x^3 - 1$ , find  $f^{-1}(x)$ .

a)  $\frac{1}{3x^3 - 1}$

b)  $3x^{-1} - 1$

c)  $3(x+1)$

d)  $\sqrt[3]{\frac{x+1}{3}}$

e) none

**CALCULATOR**

## Lines and functions

21) Use your calculator to determine the interval(s) on the real axis for which  $f(x) \geq 0$  where  $f(x) = \sqrt{x-9}$ .

- a)  $(-\infty, \infty)$       b)  $[-9, 9]$       c)  $[-3, 3]$       d)  $[9, \infty)$       e) none

22) Find the relative max/min of  $f(x) = x^3 - x$ .

- a) relative maximum at  $(-0.58, -0.38)$       b) relative maximum at  $(-0.58, 0.38)$   
relative minimum at  $(0.58, -0.38)$
- c) relative maximum at  $(0.58, -0.38)$       d) no relative minimum or relative maximum  
relative minimum at  $(-0.58, 0.38)$
- e) none of these

23) Find the minimum point on the graph of  $f(x) = x^2 - 4x + 14$ .

- a)  $(2, 18)$       b)  $(-2, 18)$       c)  $(-2, 26)$       d)  $(2, 10)$       e) none

**NO CALCULATOR**

## Solving equations

24) Solve for x.  $\frac{3x}{2} - \frac{x+1}{4} = 6$

- a) 5      b)  $\frac{23}{5}$       c)  $\frac{35}{8}$       d)  $\frac{1}{2}$       e) none

25) Solve for x.  $\frac{1}{x-3} - \frac{2}{x+3} = \frac{2x}{x^2-9}$

- a)  $-\frac{1}{2}$       b) 3      c) -3      d) -3 and 3      e) none

26) Solve for x.  $\frac{7x}{x-2} + \frac{2x}{x+2} = 9$

- a)  $-\frac{18}{5}$       b)  $\frac{2}{3}$       c)  $-\frac{2}{5}$       d)  $\frac{5}{18}$       e) none

27) Solve for p:  $g = \frac{4\pi^2 p}{r^2}$ .

28) Solve for x.  $(x + 2)^2 = -16x$

- a)  $-8 \pm 2\sqrt{15}$     b)  $-10 \pm 4\sqrt{6}$     c)  $-10 \pm 2\sqrt{26}$     d)  $-8 \pm 4\sqrt{15}$     e) none

29) Solve for x.  $(3x - 1)^2 = 25$

- a)  $-\frac{4}{3}, 2$       b)  $-2, 2$       c)  $2$       d)  $-2, \frac{4}{3}$       e) none

30) Solve for x.  $3x^3 - 24x^2 + 21x = 0$

- a)  $7, 1$       b)  $-7, -1$       c)  $0, 1, 7$       d)  $0, -1, -7$       e) none

31) Solve for x.  $(x^2 + 4)^{\frac{2}{3}} = 25$

- a)  $-5.8, 5.8$     b)  $-4.6, 4.6$     c)  $21$     d)  $-11, 11$     e) none

32) Solve for x.  $|2 - 4x| = 12$

- a)  $-\frac{5}{2}, \frac{7}{2}$       b)  $-\frac{5}{2}, -\frac{7}{2}$       c)  $\frac{5}{2}, -\frac{5}{2}$       d)  $-\frac{5}{2}$       e) none

33) Solve by factoring.  $2x^2 + 4x = 9x + 18$

- a)  $-2, \frac{9}{2}$       b)  $2, -\frac{9}{2}$       c)  $\frac{9}{2}$       d)  $-\frac{9}{2}$       e) none

34) Solve by completing the square.  $x^2 - 6x + 1 = 0$

- a)  $3 \pm \sqrt{26}$       b)  $3 \pm \sqrt{10}$       c)  $3 \pm \sqrt{17}$       d)  $3 \pm 2\sqrt{2}$       e) none

35) Solve for x.  $\frac{2x-1}{x} + 1 = \frac{4}{x+1}$

- a) 1      b) -1      c)  $-\frac{1}{3}, 1$       d)  $-1, \frac{1}{3}$       e) none

36) Solve for x.  $3x^2 - 6x + 2 = 0$

- a)  $\frac{3 \pm \sqrt{3}}{3}$       b)  $1 \pm \sqrt{3}$       c)  $\frac{3 \pm \sqrt{15}}{3}$       d)  $\frac{1}{3}, 2$       e) none

37) Solve for x.  $4x^2 + 12x = 135$

- a)  $-\frac{9}{2}, \frac{15}{2}$       b)  $-\frac{5}{2}, \frac{3}{2}$       c)  $-\frac{15}{2}, \frac{9}{2}$       d)  $-\frac{3 \pm \sqrt{6}}{2}$       e) none

38) Solve the inequality algebraically.  $3 - 2x \leq 9$

- a)  $(-\infty, -3]$       b)  $(-\infty, 3]$       c)  $[-3, \infty)$       d)  $[3, \infty)$       e) none

39) Find all the real zeros of the polynomial function  $f(x) = x^6 - x^2$ .

- a) 0      b) 0, 1      c) 1      d) 0, 1, -1      e) none

**CALCULATOR**

**Solving equations**

40) Approximate the solution(s) of  $x^4 + 2x^3 + 5x - 1 = 0$  using your graphing calculator.

- a) -2.72, 0.20      b) -1, 0      c) -2.72, -0.11      d) no solution      e) none

41) Use your graphing calculator to approximate the solution(s) of  $\frac{1}{x-3} = 9$ .

- a) 3.000      b) 3.11      c) 2.90      d) no solution

42) Approximate the points of intersection of the graphs of  $y = 5x - 14$  and  $y = -3x - 6$ .

- a) (1, -9)      b) (2, -4)      c) (3, -15)      d) no solution      e) none

43) Approximate the solution(s) of  $|3x + 10| = 13$ .

- a) 1      b) -1, 1      c) -7.67, 1      d) 1, 7.67      e) none

44) Evaluate  $y = \frac{300}{1 + e^{-2t}}$  when  $t = 3$ .

- a) 299.2582      b) 213.3704      c) 300.0025      d) 107.4591      e) none

**NO CALCULATOR**

**Factoring and division**

45) Use synthetic division to factor the polynomial  $x^3 - x^2 - 10x - 8$  completely if -2 is a zero.

- a)  $(x - 2)(x - 4)(x + 1)$       b) -2, -4, -1      c)  $(x + 2)(x - 4)(x + 1)$   
d)  $(x + 2)(x + 4)(x - 1)$       e) none of these

46) Which polynomial function has zeros of 0, -1 and 2?

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

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

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

d)  $f(x) = (x + 1)^2(x - 2)$

e) none

47) Use long division to find the quotient.  $(6x^3 + 7x^2 - 15x + 6) \div (2x - 1)$

a)  $3x^2 + 2x - \frac{17}{2} - \frac{5}{2(2x - 1)}$

b)  $3x^2 + 5x - 5 + \frac{1}{(2x - 1)}$

c)  $3x^2 + 5x + 5 + \frac{11}{(2x - 1)}$

d)  $3x^2 + 4x - 17 + \frac{29/2}{(2x - 1)}$

48) Use synthetic division to find the quotient.  $(3x^4 + 4x^3 - 2x^2 + 6x + 1) \div (x + 2)$

**NO CALCULATOR**

### Graphs

49) Find the domain of the relation shown at the right.

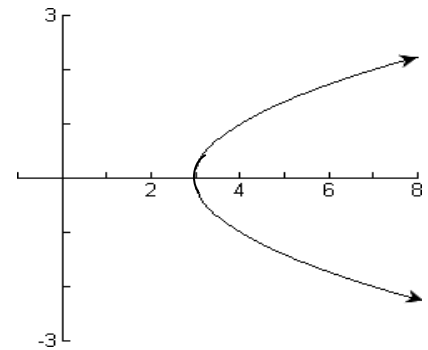
a)  $(-\infty, \infty)$

b)  $(-\infty, 3]$

c)  $(-\infty, 3)$

d)  $[3, \infty)$

e) none of these



50) Find the range of the function shown at the right.

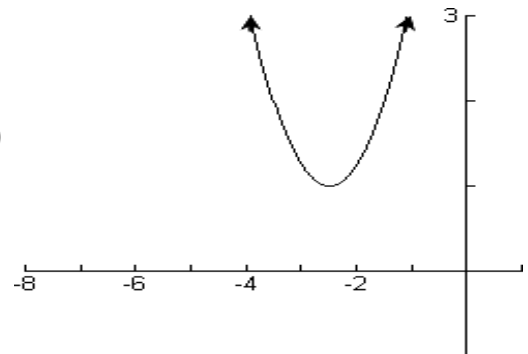
a)  $(-\infty, \infty)$

b)  $(-8, 1)$

c)  $[-3, \infty)$

d)  $[-1, 5]$

e) none of these





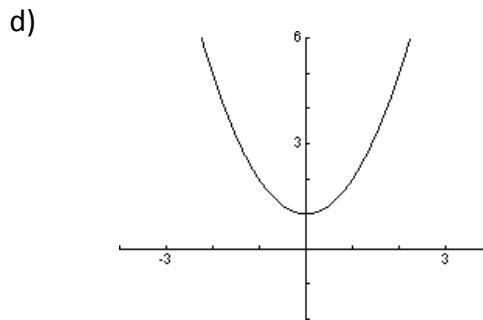
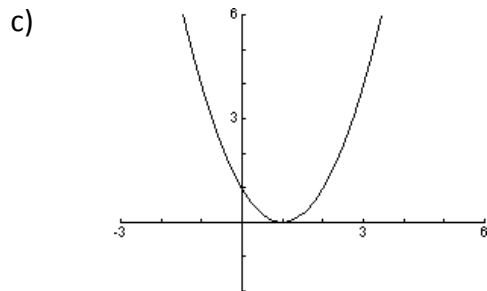
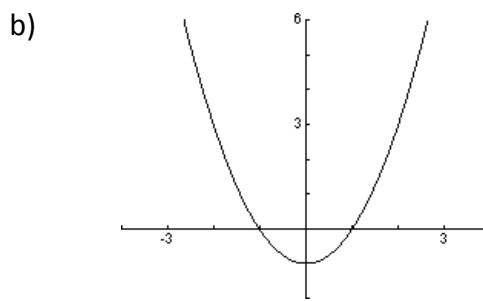
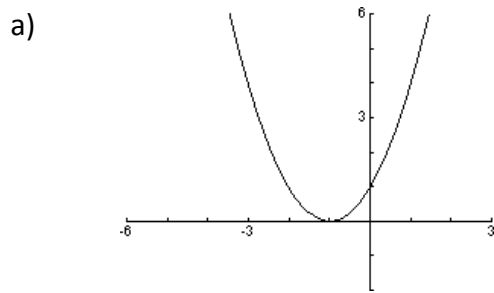
51) Find the domain of the function  $f(x) = \sqrt{5 - x}$ .

- a)  $(-\infty, 5]$       b)  $(-\infty, 5)$       c)  $[-5, \infty)$       d)  $(-5, \infty)$       e) none

52) Describe the transformation of the graph of  $f(x) = |x|$  which yields the graph of  $g(x) = |x| - 20$ .

- a) vertical shift 20 units up      b) vertical shift 20 units down  
c) horizontal shift 20 units right      d) horizontal shift 20 units left

53) Graph  $g(x) = (x - 1)^2$  using a transformation of the graph of  $f(x) = x^2$ .



54) Which sequence of transformations will yield the graph of  $g(x) = (x + 1)^2 + 10$  from the graph of  $f(x) = x^2$ ?

- a) horizontal shift 10 units right  
vertical shift 1 unit up      b) horizontal shift 1 unit left  
vertical shift 10 units up  
c) horizontal shift 1 unit right  
vertical shift 10 units up      d) horizontal shift 10 units left  
vertical shift 1 unit up

55) Find the x-intercept(s) of  $3x^2 + 2y^2 + 4xy - 12 = 0$

- a)  $(\pm\sqrt{6}, 0)$       b)  $(\pm 2, 0)$       c)  $(4, 0)$       d)  $(6, 0)$       e) none

56) Find the intercepts of the graph of  $3x + 7y = 21$ .

- a) x-int: (0, 7)      b) x-int: (0, 3)      c) x-int: (3, 0)  
y-int: (3, 0)      y-int: (7, 0)      y-int: (0, 7)
- d) x-int: (7, 0)      e) none  
y-int: (0, 3)

57) Find the x and y-intercepts:  $y = x^2 - 5x + 4$

- a) (0, -4), (0, 1), (4, 0)      b) (0, 4), (4, 0), (1, 0)      c) (0, -4), (-4, 0), (-1, 0)
- d) (0, 4), (-4, 0), (-1, 0)      e) none of these

58) Determine the left and right behaviors of the graph of  $f(x) = -x^5 + 2x^2 - 1$ .

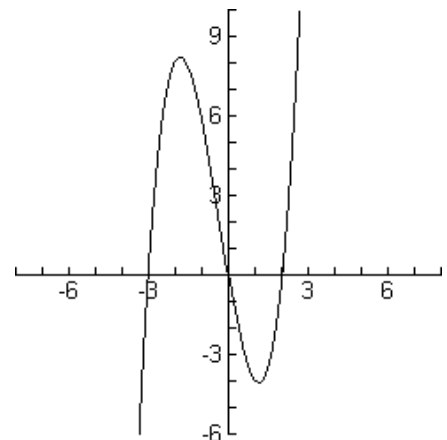
- a) up to the left, down to the right      b) down to the left, up to the right
- c) up to the left, up to the right      d) down to the left, down to the right
- e) none of these

59) Determine the left and right behaviors of the graph of  $f(x) = -x^4 + 3x^3 + 5x^2$ .

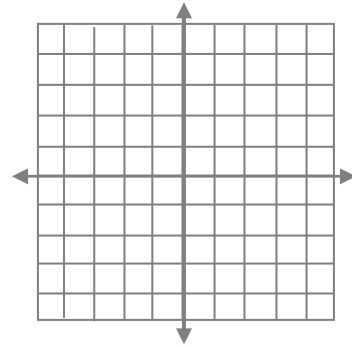
- a) up to the left, down to the right      b) down to the left, up to the right
- c) up to the left, up to the right      d) down to the left, down to the right
- e) none of these

60) Which function is graphed?

- a)  $f(x) = x^3 + x^2 - 6$       b)  $f(x) = -x^3 - x^2 + 6x$
- c)  $f(x) = x^3 + x^2 - 6x$       d)  $f(x) = x^4 + x^2 - 6x$
- e) none of these



61) Graph the following:  $f(x) = \begin{cases} -x^2 + 2, & x \leq 0 \\ x + 2, & x > 0 \end{cases}$



62) Find the domain of the function  $f(x) = \frac{1}{x^2 - 3x + 2}$ .

- a)  $(-\infty, -2), (-2, 1), (1, \infty)$       b)  $(-\infty, 1), (1, 2), (2, \infty)$       c)  $(-\infty, \infty)$   
 d)  $(-\infty, \frac{1}{2}), (\frac{1}{2}, \infty)$       e) none of these

63) Find the domain of  $f(x) = \frac{x + 2}{x^2 - 3x + 2}$ .

- a) all real numbers except -2, 1, and 2      b) all real numbers except -2  
 c) all real numbers except 1 and 2      d) all real numbers      e) none

64) Find the domain of  $f(x) = \frac{3x - 1}{x^2 + 9}$ .

- a) all real numbers      b) all real numbers except  $\pm 3$   
 c) all real numbers except  $\frac{1}{3}$       d) all real numbers except  $\frac{1}{3}, \pm 3$

65) Find the vertical asymptote(s) of the graph of  $f(x) = \frac{x + 3}{(x - 2)(x + 5)}$ .

- a)  $y = 2, y = -5, y = -3$       b)  $x = 2, x = -5, x = -3, x = 1$   
 c)  $x = 1$       d)  $x = 2, x = -5$       e) none

66) Find the horizontal asymptote(s) of the graph of  $f(x) = \frac{3x - 1}{x + 2}$ .

- a)  $y = 0$       b)  $x = -2$       c)  $x = \frac{1}{3}$       d)  $y = 3$       e) none

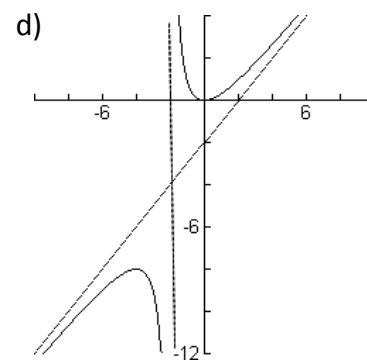
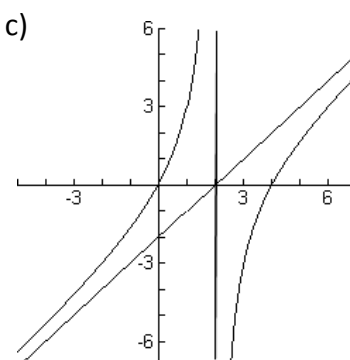
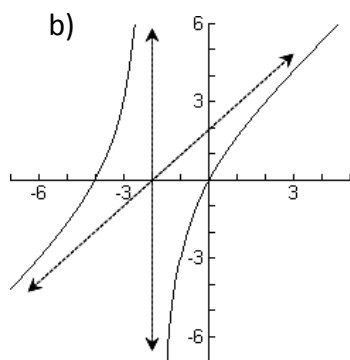
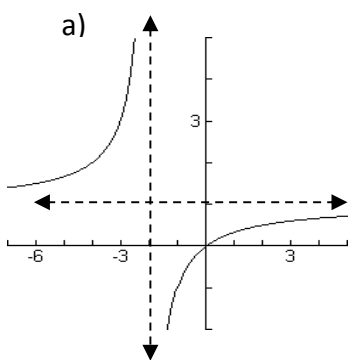
67) Find the horizontal asymptote(s) of the graph of  $f(x) = \frac{3x^2 + 2x - 16}{x^2 - 7}$

- a)  $x = \pm\sqrt{7}$       b)  $y = 3$       c)  $y = \pm 7$       d)  $y = 0$       e) none

68) Find all intercepts of the graph of  $f(x) = \frac{x - 14}{2x + 7}$ .

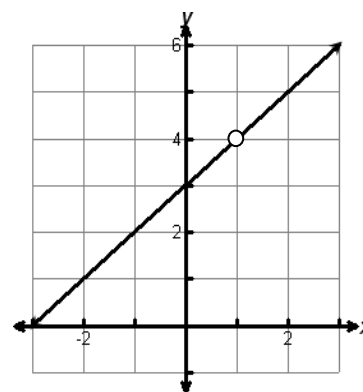
- a)  $(0, -2), (14, 0)$       b)  $(-14, 0), (\frac{1}{2}, 0)$       c)  $(14, 0), (0, \frac{1}{2})$   
 d)  $(14, 0), (0, -\frac{7}{2})$       e) none

69) Match the rational function with the correct graph.  $f(x) = \frac{x^2}{x + 2}$



70) Match the graph with the correct function.

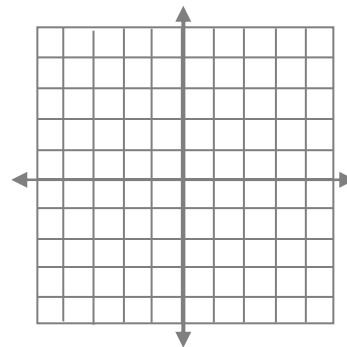
- a)  $f(x) = \frac{x + 3}{x - 1}$       b)  $f(x) = x + 3$   
 c)  $f(x) = \frac{x - 1}{x^2 + 2x - 3}$       d)  $f(x) = \frac{x^2 + 2x - 3}{x - 1}$   
 e) None of these



71) What is the domain of  $f(x) = 3 - e^x$ ?

- a)  $(3, \infty)$       b)  $[0, \infty)$       c)  $(-\infty, \infty)$       d)  $(-\infty, 3)$       e) none

72) Without using a graphing utility, sketch the graph of  $f(x) = 3^x - 2$ .



**NO CALCULATOR**

**Trigonometry**

73) Give the exact value of  $\cos\left(-\frac{3\pi}{4}\right)$ .

- a)  $-\frac{\sqrt{2}}{2}$       b)  $-\frac{1}{2}$       c)  $\frac{\sqrt{3}}{2}$       d)  $\frac{\sqrt{2}}{2}$       e) none

74) Find all solutions to  $2\cos x - \sqrt{3} = 0$  in the interval  $[0, 2\pi]$ .

- a)  $\frac{\pi}{6}, \frac{11\pi}{6}$       b)  $\frac{5\pi}{6}, \frac{7\pi}{6}$       c)  $\frac{\pi}{3}, \frac{5\pi}{3}$       d)  $\frac{2\pi}{3}, \frac{4\pi}{3}$

75) Give the exact value of  $\csc\frac{3\pi}{2}$ .

- a) 2      b) undefined      c) -1      d) 1      e) none of these

76) Find all solutions to  $\sec^2 x = \sec x + 2$  in the interval  $[0, 2\pi]$ .

- a)  $\frac{\pi}{2}, \frac{2\pi}{3}, \frac{4\pi}{3}, \frac{3\pi}{2}$       b)  $\frac{\pi}{3}, \pi, \frac{5\pi}{3}$       c)  $\frac{2\pi}{3}, \frac{4\pi}{3}$       d)  $\frac{\pi}{6}, \pi, \frac{11\pi}{6}$

77) Find the exact value of  $\tan\frac{5\pi}{6}$ .

- a)  $\frac{\sqrt{3}}{2}$       b)  $\sqrt{3}$       c) -1      d)  $-\frac{\sqrt{3}}{3}$

78) Evaluate  $\sec \frac{\pi}{3}$ .

- a)  $\frac{\sqrt{2}}{2}$       b)  $\frac{\sqrt{3}}{2}$       c)  $\frac{\sqrt{3}}{3}$       d) 2

79) Find all solutions of  $2\sin x \cos x + \cos x = 0$  in the interval  $[0, 2\pi)$ .

- a)  $\frac{\pi}{6}, \frac{\pi}{2}, \frac{5\pi}{6}, \frac{3\pi}{2}$       b)  $\frac{\pi}{2}, \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}$       c)  $\frac{5\pi}{6}, \frac{11\pi}{6}$   
d)  $0, \pi$       e) none of these

**CALCULATOR**

### Trigonometry

80) Given  $\tan \theta = 1.2617$ , find  $\theta$ .

- a) 0.0220      b) 0.9006      c) 1.0145      d) 0.3193      e) none

81) Find two values of  $\theta$  ( $0 \leq \theta \leq 2\pi$ ) that satisfy  $\sec \theta = 5.1258$ .

- a) 1.767 and 4.516      b) 1.374 and 4.909      c) 1.134 and 1.767  
d) 1.767 and 4.909      e) none of these

82) Evaluate  $\arccos(-0.4777)$ .

- a) -1.0049      b) 1.0728      c) 2.0934      d) 2.0688      e) none

NO CALCULATOR

**Logarithms and natural logarithms**

83) Solve for  $x$ .  $27^x = 81$

- a)  $\frac{3}{4}$       b)  $-\frac{1}{3}$       c)  $\frac{4}{3}$       d)  $\frac{2}{3}$       e) none

84) Evaluate.  $\ln e^{1-x}$

- a)  $e^{1-x}$       b)  $e$       c)  $1-x$       d)  $\ln(1-x)$       e) none

85) Simplify.  $\ln \sqrt[5]{e^3 x}$

- a)  $\frac{3e}{5} + \frac{1}{5} \ln x$       b)  $\frac{3e}{5} + \ln \frac{x}{5}$       c)  $\frac{3}{5} + \ln \frac{x}{5}$       d)  $\frac{3}{5} + \frac{1}{5} \ln x$       e) none

86) Simplify.  $\ln \sqrt{e^3}$

- a)  $\ln \frac{3}{2}$       b)  $\ln \frac{2}{3}$       c)  $\frac{3}{2}$       d)  $\frac{2}{3}$       e) none

87) Solve for  $x$ .  $\ln e^{2x+1} = 9$

- a)  $\frac{-1 + \ln 9}{2}$       b)  $\frac{9}{2 \ln e} - \frac{1}{2}$       c) 23      d) 4      e) none

88) Simplify.  $7 + \ln e^{5x}$

- a)  $5x + \ln 7$       b)  $7 + 5x$       c)  $\frac{\ln 7}{5x}$       d)  $35x$       e) none

89) Solve for x.  $2^{1-x} = 3^x$

- a)  $\frac{\ln 2}{\ln 6}$       b)  $\ln \frac{1}{3}$       c)  $\ln \frac{2}{3}$       d)  $\ln 3 + \ln 2$       e) none

90) Solve for x.  $\ln(7 - x) + \ln(3x + 5) = \ln(24x)$

- a)  $\frac{6}{11}$       b)  $\frac{7}{3}$       c)  $\frac{7}{3}, -5$       d)  $\frac{6}{11}, 5$       e) none

91) Find the domain of the function  $f(x) = \ln(x-1)$ .

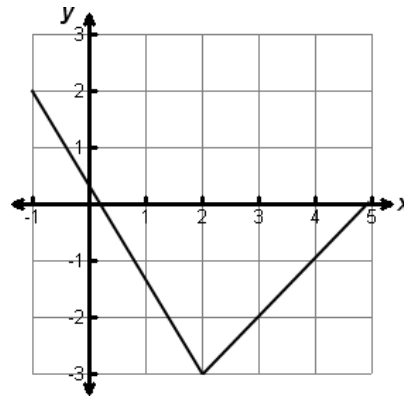
- a)  $(-\infty, \infty)$       b)  $(0, \infty)$       c)  $(1, \infty)$       d)  $(-\infty, 1)$       e) none

**NO CALCULATOR**

**Limits**

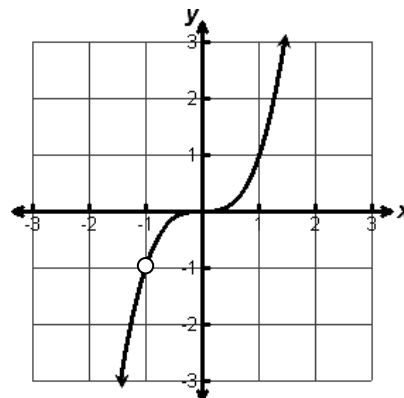
92) Use the graph to estimate  $\lim_{x \rightarrow 2} f(x)$ .

- a) DNE      b) 0  
c) -3      d) 2  
e) none



93) Use the graph to find  $\lim_{x \rightarrow -1} f(x)$ , if it exists.

- a) 1      b) -2  
c) DNE      d) -1  
e) -3





94) Find  $\lim_{x \rightarrow -3} (-2x^2 + 1)$

- a) 37                      b) 19                      c) -17                      d)  $\pm\sqrt{2}$                       e) none

95) Find  $\lim_{x \rightarrow 1} \frac{3x^3 - 4x^2 - 5x + 2}{x^2 - x - 2}$ .

96) Find  $\lim_{x \rightarrow 1} f(x)$  if  $f(x) = \begin{cases} x^2 + 4, & x \neq 1 \\ 2, & x = 1 \end{cases}$

97) If  $\lim_{x \rightarrow c} f(x) = -\frac{1}{2}$  and  $\lim_{x \rightarrow c} g(x) = \frac{2}{3}$ , find  $\lim_{x \rightarrow c} [f(x) - g(x)]$ .

98) Find  $\lim_{x \rightarrow -1} \frac{x^2 - 5x - 6}{x + 1}$ .

- a) 0                      b) -7                      c)  $-\infty$                       d)  $\infty$                       e) none

99) Find  $\lim_{x \rightarrow -2} \frac{x + 2}{x^3 + 8}$ .

- a)  $\frac{1}{20}$                       b) 0                      c)  $-\frac{1}{4}$                       d)  $\frac{1}{12}$                       e) DNE

100) Find the limit.  $\lim_{\Delta x \rightarrow 0} \frac{(x + \Delta x)^2 - 2(x + \Delta x) - (x^2 - 2x)}{\Delta x}$

- a)  $-4x$                       b) -2                      c)  $2x - 2$                       d) DNE                      e) none