Honors Precalculus
Review for 1st Semester Final

Appendix B

1. Find the distance between $\frac{-2}{3}$ and -5

a) $\frac{17}{3}$ b) $\frac{13}{3}$

c) $\frac{-7}{3}$ d) $\frac{-14}{3}$ e) None of the above

2. Find the solution : $\frac{3}{x+1}-\frac{7}{x+2}=\frac{1}{x^2+3x+2}$

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

c) $\frac{3}{2}$ d) $\frac{-1}{2}$ e) None of the above

3. Find the solution: $2x^2-3x-7=0$

a) $\frac{3\pm\sqrt{47}}{4}$ b) $\frac{-3\pm\sqrt{65}}{4}$

c) $\frac{3\pm\sqrt{65}}{4}$ d) $\frac{-3\pm\sqrt{47}}{4}$ e) None of the above

4. Find the solution interval(s): $|7x-5|<3$

a) $x<\frac{8}{7}$ b) $x<-\frac{8}{7}$

c) $-\frac{8}{7}<x<\frac{8}{7}$ d) $\frac{2}{7}<x<\frac{8}{7}$ e) None of the above

5. Find the interval(s) on which $\sqrt{x^2-x-6}$ is defined.

a) $x\le -2, x\ge 3$ b) $-2\le x\le 3$

b) $-3\le x\le 2$ d) $x\le -3, x\ge 2$ e) None of the above

6. Find the solution interval(s): $\frac{x+1}{x-3}<2$

a) $x>7$ b) $x<3, x>7$

c) $x<-2, x>3$ d) $-2<x<3$ e) None of the above

7. Use inequality notation to describe; The distance between x and -2 is at most 7.

a) $|x-2| \geq 7$ b) $|x+2| \leq 7$

c) $|x+2 \leq 7|$ d) $x+2<7$ e) None of the above

8. Solve for x: $3x+7(x-4)=2x+1$

a) $\frac{29}{8}$ b) $\frac{5}{8}$

b) $-\frac{27}{12}$ d) $-\frac{27}{8}$ e) None of the above

9. Find the midpoint of the line segment joining the points $(-3, 1)$ and $(5, -7)$

a) (- 4, 4) b) (1, - 3)

c) (- 4, - 3) d) (1, 4) e) None of the above

10. Use the distance formula to determine what kind of triangle is formed by using the points (- 5, - 1), (2, 2), and (0, - 3) as vertices of the triangle.

a) Scalene b) Right Isosceles

c) Equilateral d) Isosceles e) None of the above

11. Find x so that the distance from the origin to the point (x, 9) is 15.

a) $\pm 3\sqrt{34}$ b) $\pm 2\sqrt{11}$

c) ± 9 d) ± 12 e) None of the above

12. Find the x-intercept(s) : $y=2x^2-1$

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

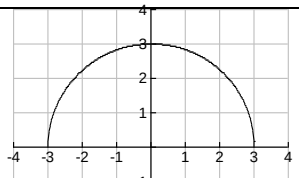
c) $\pm\frac{\sqrt{2}}{2}$ d) $\pm\sqrt{2}$ e) None of the above

13. Given $f(x)=|x-3|-5$, find $f(1)-f(5)$

a) 0 b) -4

c) 14 d) -14 e) None of the above

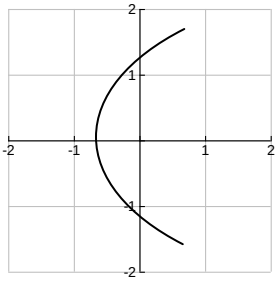
14. Find the range of the function: $y=\sqrt{9-x^2}$



a) $(-\infty,-3],[3,\infty)$ b) $[-3,3]$

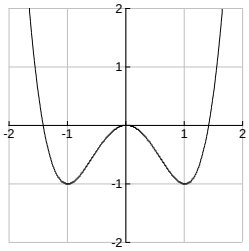
c) $[0,3]$ d) $[3,\infty)$ e None of the above

15. Does the graph depict *y* as a function of *x* ?



a) *y* is a function of *x* b) *y* is not a function of *x*

16. Determine the intervals over which the function is increasing: $y=x^4-2x^2$



a) $(-\infty,-1)$ b) $(-\infty,-1),(0,1)$

c) $(-1,0),(1,\infty)$ d) $(-\infty,-1),(0,-1)$

e) None of the above

17. Determine whether the function is one-to-one. If it is, find its inverse.

$$f(x)=\frac{7}{x+2}$$

a) Not one-to-one b) $f^{-1}(x)=\frac{x+2}{7}$

c) $f^{-1}(x)=\frac{7-2x}{x}$ d) $f^{-1}(x)=-\frac{7}{x+2}$ e) None of the above

18. Find the slope of the line passing through the points (-1, 16) and (4, 2)

a) $-\frac{5}{14}$ b) $-\frac{14}{5}$

c) $\frac{5}{14}$ d) $\frac{14}{5}$ e) None of the above

19. Write the equation of the vertical line passing through (2, 5)

a) $y=2$ b) $y=5$

c) $x=2$ d) $x=5$ e) None of the above

20. Write the equation of the line that passes through (1, 3) and is perpendicular to $2x+3y+5=0$.

a) $3x-2y+3=0$ b) $2x+3y-11=0$

c) $2x+3y-9=0$ d) $3x-2y-7=0$ e) None of the above

21. Given $f(x)=2x^2+1$ and $g(x)=x-2$, find $(f\circ g)(x)$.

a) x^2-7 b) $2x^2+x-1$

b) $2x^2-1$ d) $2x^2-8x+9$ e) None of the above

22. Given $f(x)=\sqrt{2x-1}$, find $f^{-1}(x)$

a) $\sqrt{2y-1}$ b) x^2+1

c) $\frac{1}{2}(x^2+1)$ d) $\frac{1}{\sqrt{2x-1}}$ e) None of the above

23. Find the functions f and g such that $(f\circ g)(x)=h(x)$: $h(x)=(x-2)^2+1$

a) $f(x)=x^2+1$; $g(x)=x-2$ b) $f(x)=x-2$; $g(x)=x^2+1$

c) $f(x)=(x-2)^2$; $g(x)=1$ d) $f(x)=x^2-1$; $g(x)=6-4x$ e) None of the above

Chapter 2

1. Determine the right and left behavior of the function: $f(x) = -x^5 + 2x^2 - 1$

   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

2. Find all the real zeroes of the function: $f(x) = 3x^4 - 27x^3 + 54x^2$

   a) 0, 3, 9, 2
   b) 0, 6, 3
   c) 0, 9, 2
   d) 0, 6
   e) None of these

3. Divide: $(6x^3 + 7x^2 - 15x + 6) \div (2x - 1)$

   a) $3x^2 + 2x - \frac{17}{2} - \frac{5}{2(2x-1)}$
   b) $3x^2 + 5x - 5 + \frac{1}{2x-1}$
   b) $3x^2 + 5x + 5 + \frac{11}{2x-1}$
   d) $3x^2 + 4x - 17 + \frac{29/2}{2x-1}$
   e) None of these

4. Use synthetic division to perform the following division: $(5x^4 - 2x^2 + 1) \div (x + 1)$

   a) $5x^3 - 5x^2 + 3x - 3 + \frac{4}{x+1}$
   b) $5x^2 - 7x + 8$
   c) $5x^2 + 3x + 4$
   d) $5x^3 + 5x^2 + 3x + 3 + \frac{4}{x+1}$
   e) None of these

5. Find the quadratic function that has a maximum point at (-1, 17) and passes through the point (7, 1).

   a) $y = \frac{1}{4}(-x^2 - 2x + 16)$
   b) $y = -\frac{1}{4}(x+1)^2 + 17$
   c) $y = (x-7)^2 + 1$
   d) $y = (x-1)^2 + 17$
   e) None of these

6. List all the possible rational zeros of the function : $f(x)=3x^5+2x^2-3x+2$

a) $\pm 3, \pm 2, \pm \frac{3}{2}, 1, \pm \frac{2}{3}$ b) $\pm 3, \pm \frac{1}{3}, \pm 2, \pm \frac{1}{2}, \pm 1$

c) $\pm 2, \pm 1, \pm \frac{2}{3}, \pm \frac{1}{3}$ d) $\pm 3, \pm 1, \frac{3}{2}, \pm \frac{1}{2}$ e) None of these

7. Find a polynomial with real coefficients that has the following zeros: *0, 3, -3, i, -i*

a) $f(x)=x^5-8x^3-9x$ b) $f(x)=x^5-10x^3+9x$

c) $f(x)=x^3-4x^2+3$ d) $f(x)=x^5-9x$ e) None of these

8. Write $f(x)=x^4-3x^2-28$ as a product of linear factors.

a) $(x^2+4)(x^2-7)$ b) $(x-2i)(x+2i)(x-\sqrt{7})(x+\sqrt{7})$

c) $(x+2i)(x+2i)(x+\sqrt{7})(x-\sqrt{7})$ d) $(x-2i)(x-2i)(x-\sqrt{7})(x+\sqrt{7})$

e) None of these

9. Write $7+\sqrt{-16}$ in standard form.

a) $7+4i$ b) $7-4i$

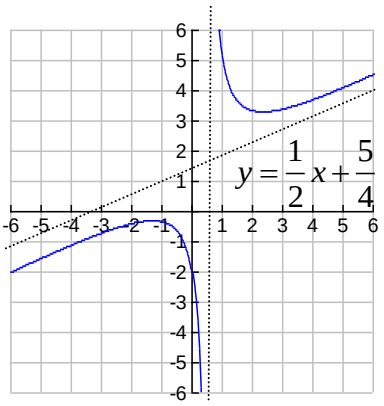
c) 11 d) 3 e) None of these

10. Multiply : $(3+7i)(2-4i)$

a) $-22+2i$ b) $22+2i$

c) $34+2i$ d) $34-2i$ e) None of these

11. Match the graph at the right with the correct equation.



a) $f(x) = \dfrac{1}{2x+1}$

b) $f(x) = \dfrac{x-1}{2x+1}$

c) $f(x) = \dfrac{x^2+2x+2}{2x-1}$

d) $f(x) = \dfrac{x^3+2x^2+x-2}{2x+1}$

e) None of these

12. Find the horizontal asymptote of the graph of $f(x) = \dfrac{7}{x-4}$

a) $x = 4$

b) $y = 7$

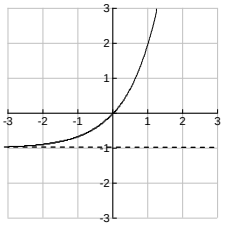
c) $y = 0$

d) $x = 0$

e) None of these

Chapter 3

1. Match the graph at the right with the correct function.



a) $y = 3^{x-1}$ b) $y = 3^{x} - 1$

c) $y = 3^{1-x}$ d) $y = 3^{-x} - 1$ e) None of these

2. If \$3700 is invested at 11.5% interest compounded continuously, find the balance in the account after 5 years.

a) \$3,918.99 b) \$20,754.65

c) \$6,575.38 d) \$7,376.75 e) None of these

3. Evaluate: $\log_7 7$

a) 1 b) 0

c) 2 d) 49 e) None of these

4. Write in exponential form: $\log_b 37 = 2$

a) $37^2 = b$ b) $2^b = 37$

c) $b = 10$ c) $b^2 = 37$ e) None of these

5. Solve for *x:* $16 = 2^{7x-5}$

a) 0.1143 b) -0.3010

c) $\frac{13}{7}$ d) $\frac{9}{7}$ e) None of these

6. Evaluate $\log_7 15$ using change of base formula.

a) 1.3917 b) 12.6765

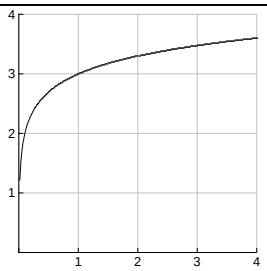
c) 2.1429 d) 0.7186 e) None of these

7. Determine the domain of the function: $f(x) = 3\log(5x-2)$

a) $(-\infty, \infty)$ b) $(0, \infty)$

c) $\left(\frac{2}{5}, \infty\right)$ c) $(0.064, \infty)$ e) None of these

8. Match the graph at the right with the correct function.



a) $f(x) = 3 + \log x$ b) $f(x) = \log(x+3)$

c) $f(x) = \frac{1}{3}\log x$ c) $f(x) = 3\log x$ e) None of these

9. Evaluate: $\frac{3\ln 5}{7\ln 6 - 2\ln 7}$

a) - 3.8222 b) - 2.6559

c) 0.5582 d) - 11.6058 e) None of these

10. Solve for *x:* $3^{2x} = 5^{x-1}$

a) - 0.5563 b) - 1

d) - 2.7381 d) 15.2755 e) None of these

11. 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) $\frac{7}{3}, 5$ e) None of these

12. Solve for *x:* $\ln e^{4x} = 60$

a) 2.7832 b) 15

c) 1.0236 d) 2.7081 e) None of these

13. Evaluate: $\dfrac{3e^{(0.0721)(52)}}{(1-0.0721)}$

a) 4.2727 b) 180.6908

c) 137.3653 d) -410.3055 e) None of these

14. Which of the following is not true?

a) $b^{\log_b e} = e$ b) $\log_1 b = b$

c) $\log_b b = 1$ d) All are false e) All are true