**Pre-Calculus Honors Midterm Review Chapters 1, 2, 3, 7 and 8**

***Chapter 1 Multiple Choice Questions***

1. Solve for *x*: 

A.  B.  C.  D.  E. 

2. Compare the graph of  with .

1. *t* is obtained by reflecting *s* over the x-axis B. *t* is obtained by reflecting *s* over the y-axis

*C. t* is obtained by shifting *s* up D. *t* is obtained by shifting *s* down

*E. t* is obtained by shifting *s* left

3. Given , find *g(x)* such that .

A.  B.  C. 

D.  E. 

4. Find the inverse of .

A.  B.  C. 

D.  E. 

5. Which of the following functions is *not* one-to-one?

A.  B.  C. 

D.  E. 

6. Find the x-intercepts of .

A. (8, 0), (10, 0) B. (-8, 0), (-10, 0) C. (-8, 0), (10, 0) D. (8, 0), (-10, 0) E. (-16, 0), (5, 0)

7. Approximate the zero furthest to the right accurate to three decimal places for .

A. –1.573 B. –1.003 C. 7.332 D. 19.073 E. 20.001

8. Approximate the zero furthest to the left accurate to three decimal places for .

A. –1.741 B. –0.740 C. 1.742 D. 1.930 E. 2.741

9. Find the vertex of the function .

A. (-6, 69) B. (6, 69) C. (-6, -33) D. (-6, -69) E. (6, -33)

10. Approximate to three decimal places the minimum *value* of .

A. –17.450 B. –1.700 C. –0.700 D. 1.700 E. 17.450

11. Given  and , find .

A. 235 B. 225 C. –215 D. –225 E. -235

12. For what value(s) of *x* is the graph of above the x-axis?

A.  B.  C.  D.  E. none of these

***Chapter 2 Multiple Choice Questions***

1. What is the remainder when  is divided by .

A. – 4 B. 5 C. 4 D. 0 E. none of these

2. Determine the remainder when is divided by .

A. 1 B. 2x² + 1 C. x + 1 D. 2x² - 1 E. x

3. Which of the following is an x-intercept of ?

A. (-2 , 0) B. (3 , 0) C. (1 , 0) D.  E. 

4. Simplify .

A. -18 B.  C.  D. 18 E. 

5. Which of the following is the horizontal asymptote for .

A. y = 1 B. y = 4 C. y = 0 D. y = -1 E. none

6. Choose the appropriate statement for the graph of a parabola in the form  where *a*, *h*

 and *k* are real numbers and *x* is a variable.

A. vertex at *(h , k)* with an axis of symmetry of 

B. vertex at *(h , -k)* with an axis of symmetry of 

C. vertex at *(-h , k)* with an axis of symmetry of 

D. vertex at *(h , -k)* with an axis of symmetry of 

E. vertex at *(h , k)* with an axis of symmetry of 

7. A polynomial function has complex roots of 7i +2 and 5. Which of the following must also be a root?

A. - 5i B. -5 C. 7i -2 D. -7i + 2 E. -7i – 2

8. Determine the polynomial with real coefficients having roots $2 and 3i$.

A. $f\left(x\right)=x^{2}+3ix+2x+6i$ B. $f\left(x\right)=x^{2}+3ix-2x-6i$ C. $f\left(x\right)=x^{3}-2x^{2}+9x-18$

D. $f\left(x\right)=x^{3}-2x^{2}-9x+18$ E. $f\left(x\right)=x^{2}-3ix-2x-6i$

9. Given $f\left(x\right)=-4x^{3}+9x-10+15x^{2}$, state the leading coefficient, the degree, the possible number

 of turns and the possible number of positive, real zeros, the total number of zeros, the possible number of

 negative real zeros, the list of possible, rational zeros.

Use the graph to the right to answer questions 10-13.

10. $\lim\_{x\to -2^{+}}f(x)$

A. 0 B. -2 C. $-\infty $ D. E. -4

11. $\lim\_{x\to -2^{-}}f(x)$

A. 0 B. -2 C. $-\infty $ D. $\infty $ E. -4

12. $\lim\_{x\to \infty }f(x)$

A. 0 B. -2 C. $-\infty $ D. $\infty $ E. -4

13. $\lim\_{x\to -\infty }f(x)$

A. 0 B. -2 C. $-\infty $ D. $\infty $ E. -4

***Chapter 3 Midterm Questions***

1. If , then what is the solution for *x*?

A. 0, 6 B. 6 C. -2 D.  E. -6

2. Given that , find the value of *x*.

A. 0, 3 B. 1, 3 C. D. E.

3. Condense 

A.  B.  C.  D.  E. 

4. Solve for the *exact* solution of .

A. 2 B.  C. 1, 0 D.  E. none of these

5. Solve for the *exact* solution of .

A. 6 B.  C.  D.  E. none of these

6. Solve for the *exact* value of .

A. B.  C.  D.  E. none of these

7. Solve for the *exact* value of .

A. -2, 3 B. 3 C.  D.  E. none of these

8. If  then *x* is equal to what value?

A.  B.  C.  D.  E. 

9. Find the domain of the graph of .

A. x < 5 B. x > -5 C. all real numbers D.  E. x > 0

10. Solve the equation .

A. 1 B. -1 C. 8 D. -8 E. none of these

11. Find the range of the function .

A. y > 0 B. y < 0 C. y < -2 D. y > -2 E. y < 2

12. Solve to three decimal places .

A. - 1.685 B. 1.685 C. 8.648 D. 18.648 E. 18.685

13. Simplify .

A.  B. 2x – 1 C.  D. 6x-3 E. none of these

14. Write  in exponential form.

A.  B.  C.  D.  E. 

15. Evaluate 

A.  B.  C.  D.  E. 

16. Solve for x: .

A. 10 B. 12 C. 120 D. 300 E. 65

17. Choose the expression that represents changed to the natural base.

A.  B.  C.  D.  E. 

18. Choose the expression that represents changed to the common log.

A.  B.  C.  D.  E. 

19. Evaluate to the nearest ten-thousandth.

A. 1.8837 B. 1.3102 C. 1.1803 D. 1.1302 E. 0.1679

20. Condense completely. 

A.  B.  C. 

D.  E. 

21. Condense completely. 

A.  B.  C.  D.  E. 

22. If and , write an expression for in terms of *x* and *y*.

A. x – y B.  C.  D. x + y E. y – x

23. Choose the appropriate interval for the domain of .

A.  B.  C.  D.  E. 

24. If the graph of is shifted 4 units to the right, the equation of the transformed graph would be:

A.  B.  C.  D.  E. 

**Chapter 7 Midterm Questions**

1. Solve the system 

A. ( 0 , -5) B. (4 , 3) C. (0 , -5) and (4 , 3) D. (3 , 4) E. (3 , 4) and (0 , 5)

2. A small business has an initial investment of $5000. The unit cost of the product is $21.60 and the selling

 price is $34.10. How many units must be sold to break even?

A. 90 B. 200 C. 147 D. 400 E. 231

3. The solution to a system of equations represents:

A. The zeros of each graph.

B. The minimum or maximum of each graph.

C. Where the graphs intersect.

D. The y-intercepts of the graphs.

E. Where the graphs have slopes of zero.

4. Two planes start from the same airport and fly in opposite directions. The second plane starts one half of an

 hour after the first plane, but its speed is 80kilometers per hour faster. Find the airspeed of each plane if two

 hours after the first plane departs the planes are 3200 kilometers apart.

A. 800 km/hr, 880 km/hr

B. 450 km/hr, 530 km/hr

C. 200 km/hr, 280 km/hr

D. 960 km/hr, 1040 km/hr

E. 880 km/hr, 960 km/hr

5. How many liters of an 80% acid solution must be added to 10 liters of a 20% acid solution to get a 30% acid

 solution?

A. 1 B. 2 C. 3 D. 4.5 E. 8

6. Solve the system 

A. (-1 , 3, 0) B. (1 , -1, 2) C. no solution D. (1, -1, 3) E. (2, 1, 5)

7. Write the partial fraction decomposition for .

A.  B.  C.  D.  E. 

8. A total of $1520 a year is received in interest from three investments. The interest rates for the three

 investments are 5%, 7% and 8%. The 5% investment is half of the 7% investment and the 7% investment

 is $1500 less than the 8% investment. Find the amount in each investment.

A. $3000 5%, $6000 at 7%, $7500 at 8%

B. $11,200 at 5%, $5600 at 7%, $4100 at 8%

C. $800 at 5%, $16000 at 7%, $17500 at 8%

D. $4000 at 5%, $8000 at 7%, $9500 at 8%

E. $10000 at 5%, $5000 at 7%, $6500 at 8%

9. Write the form of the partial fraction decomposition  . Do not solve for the constants.

A.  B.  C. 

D.  E. 

10. The first step in writing the partial fraction decomposition of .

A. factoring the numerator

B. writing it as 

C. graphing to find all rational zeros

D. graphing to find all asymptotes

E. doing long division

***Chapter 8 Multiple Choice Questions***

1. Determine the focus 

A. (-2 , -1) B. (-4 , -3) C. (0 , -3) D. (-2 , -5) E. (-2 , -3)

2. Write the equation of the ellipse in standard form .

A.  B.  C. 

D.  E. 

3. Find the asymptotes of the following hyperbola: 

A.  B.  C.  D.  E. 

4. Find the vertices of the hyperbola in problem #5.

A.  B.  C.  D.  E. 

5. Find the foci of the hyperbola 

A.  B.  C.  D.  E. 

6. Find the standard form of the ellipse having vertices (3 , 1) and (3 , 9) and minor axis of length 6.

A.  B.  C. 

D.  E. 

7. Find the equation of the hyperbola with the following graph:

A.  B.  C. 

D.  E. 

8. Find the standard form of the parabola having directrix  and focus (5 , 1).

A.  B.  C. 

D.  E. 

9. Find the standard form of the parabola having the following graph:

A.  B.  C. 

D.  E. 

10. Find the equation of the ellipse with the following graph:



A.  B. 

C.  D.  E. 

11. Find equation of ellipse having center (-5 , 2) and foci (-8 , 2) and (-2, 2) and minor axis of length 8.

A.  B.  C. 

D.  E. 