Math 1330
Sample Free Response Questions
Test 2 (Chapters 1, 2, 8 and 4.1 – 4.3)

FOCUS ON GRAPHING!!

1. Suppose. $f(x)=\dfrac{x-1}{x+4}$. Find any holes, vertical asymptotes and horizontal asymptotes, x intercepts and y intercepts. Then use all information to graph the rational function.

2. Suppose $f(x)=\dfrac{x^2-16}{2x^2+8x}$. Find any holes, vertical asymptotes and horizontal asymptotes, x intercepts and y intercepts. Then use all information to graph the rational function.

3. $x^2+y^2-2x+6y-6=0$ is an equation of a circle. Find the center and the radius. Then graph the circle.

4. For each ellipse, find the center, vertices, length of major and minor aces, foci, eccentricity and then graph.

(a) $\dfrac{x^2}{9}+\dfrac{y^2}{16}=1$ (b) $\dfrac{(x-3)^2}{25}+\dfrac{(y+2)^2}{4}=1$

5. For each parabola, find the vertex, focus, equation of the directrix, focal width, endpoints of focal chord and then graph.

(a) $(x-2)^2=8y$ (b) $y^2=-12x$

6. For each hyperbola, find the center, vertices, length of transverse and conjugate axes, foci, eccentricity and equations of the asymptotes and then graph.

(a) $\dfrac{(x-1)^2}{9}-\dfrac{(y+1)^2}{4}=1$ (b) $\dfrac{y^2}{16}-\dfrac{x^2}{4}=1$

7. Graph $f(x)=x(x-2)^2(x+3)^2$. State the x intercepts and y intercept. Make sure your graph shows the correct behavior at each x intercept and the correct end behavior.

8. Use transformations to graph each function. State the translation of the key point. State the range of the function. Is the function one-to-one?

(a) $f(x) = \sqrt{x-5} + 2$ (b) $f(x) = |x+1| - 3$

9. Sketch the system. Then state the number of intersection points. (You don't need to find them…just count them.)

$$\frac{y^2}{16} - \frac{x^2}{9} = 1$$
$$(x-2)^2 + (y-1)^2 = 36$$

10. Solve the system of equations.

$$x^2 + y^2 = 9$$
$$9x^2 - y^2 = 1$$

11. In right triangle ABC with right angle C, $\tan B = \frac{2\sqrt{3}}{5}$. Draw and label triangle ABC. Then find all six functions of angles A and B.

12. You need to know the unit circle and be able to evaluate every special angle and quadrantal angle in one revolution around the circle, both positive measures and negative measures, in both degrees and radians.

(a) $\sin(300°)$

(b) $\tan\left(\frac{-\pi}{4}\right)$

(c) $\cos(120°)$

(d) $\sec(225°)$

(e) $\sin\left(\frac{5\pi}{6}\right)$

(f) $\csc\left(\frac{4\pi}{3}\right)$

(g) $\cot(-45°)$