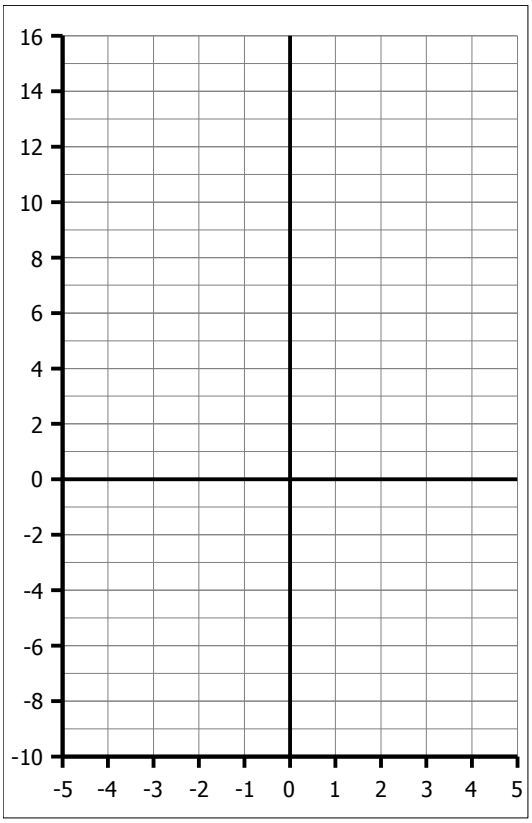
MS 100 College Algebra fx (11 students) Name:

1. [4c.82] Find the vertex for the function

$$f(x)=\frac{-16x^2}{27}+12$$

and write the vertex in (h, k) format.



2. [1b.55] Find the zeros for the function:

$$f(x)=\frac{-16x^2}{27}+12$$

3. [1a.36, 3a] Plot the function $f(x)=\frac{-16x^2}{27}+12$

4. [1_.18] Solve by the method of your choice, if the solutions involve imaginary numbers, then write the solution(s) as a complex number.

$2.5x^2 - 15x + 40 = 0$

5. [1b.00] Solve for x: $\frac{1+\sqrt{x}}{2}-1=\frac{2}{1+\sqrt{x}}$

6. [1c.91] Multiply the following complex numbers: $(3+i\sqrt{7})(3-i\sqrt{7})$

7. [1d.64] Solve the inequality and sketch the solution on a number line: $-3x+7<28$

8. [2a.73] Find the equation of the line through (– 41, 19) and (-37, 41)

9. [3b.70] Perform the long division $(x^3 + 3x^2 - 33x - 35) \div (x - 5)$

10. For the following questions use:
$f(x) = 16x^2 + 56x + 49$
$g(x) = 4x + 7$

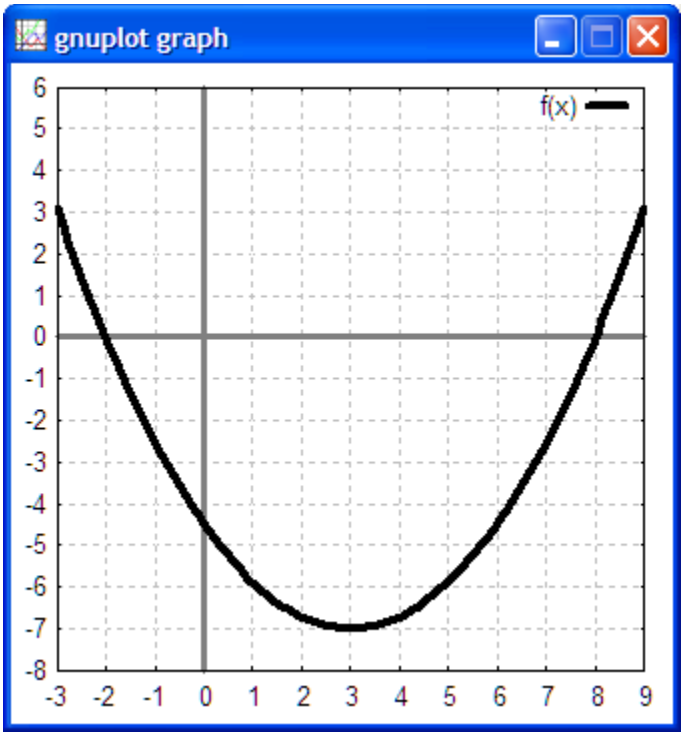
a. [2b.36] _____ Find $(g \circ f)\left(\frac{-7}{4}\right)$

b. [2d.55] _____ Find $(f \circ g)(x)$

c. [2d.73]_____ Find $(g \circ f)(x)$

d. [2e.36] Find the inverse function $g^{-1}(x)$ using $g \circ g^{-1}(x) = x$

11. [2c.09, 3a] a. For the graph seen on the right, find the $(y - k) = a(x - h)^2$ form of the quadratic using the vertex and x-intercepts as seen on the graph.

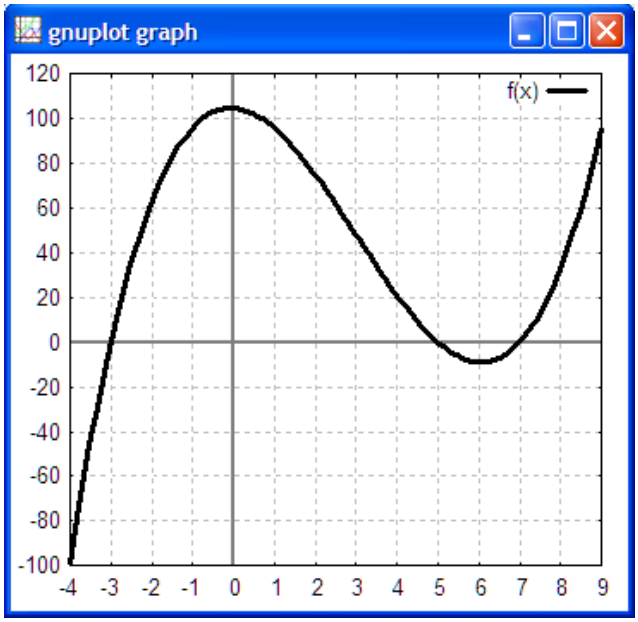


12. [4a new] Find the domain of the function q(x): $q(x) = \frac{2}{1 - \sqrt{x}}$

13. [3c.50] a. _____ I covered 5.346 kilometers in 33.47 minute run from Piyuul to Fulkrin. Calculate my pace in minutes per kilometer.

[3c.50] b. _____ At the pace calculated in part a, how long would it take me to run the 12.62 kilometers from Piyuul to Inkoyac?

14. [2c.73, 3a] a. Is the function f(x) depicted in the graph an even or odd function?



[2c.91, 3a] b. How many zero's does the function have?

[3a.06 new, related to linear factor question t4#8]
c. How many linear factors does the function have?

d. [3a new] Given that the zero's are integers, what are the three solutions to the function f(x) shown in the graph?

15. For $\frac{(x-2)}{(x^2-4x-5)}$

a. [4_.50] Find the y-intercept.

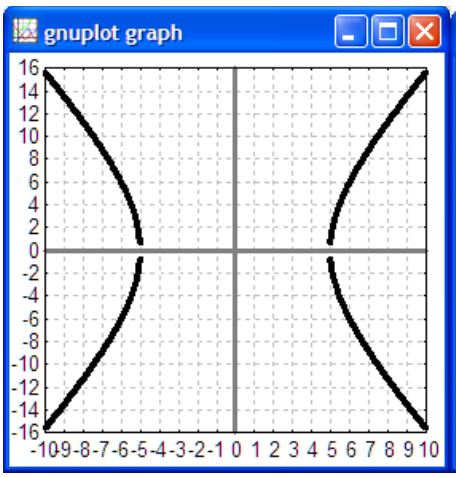
b. [4_.50] Find the x-intercept(s) [zero(s)]

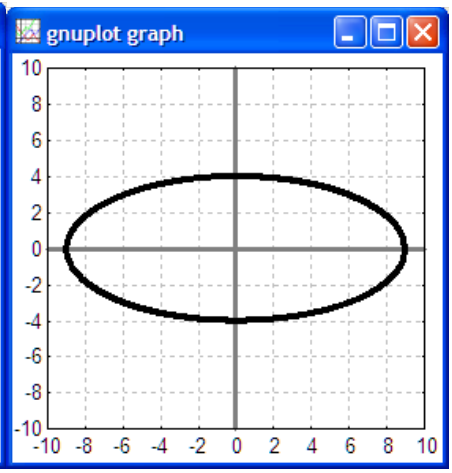
c. [4a new] Find the domain of the function

d. [4b.30] Find the vertical asymptotes

e. [4b.40] Find the horizontal asymptote.

16. [4c.88, 0.88] Give the name of the following shapes:





17. [4c.88, 1.00, 1.00, 0.88] For each of the following equations, write the name of the shape formed by the equation:

a. $\frac{(x-3)^2}{25}-\frac{(y-7)^2}{9}=1$ b. $\frac{(x-3)^2}{25}+\frac{(y-7)^2}{25}=1$

c. $\frac{(x-3)^2}{25}+\frac{(y-7)}{25}=1$ d. $\frac{(x-3)^2}{25}+\frac{(y-7)^2}{9}=1$

e. [4c.63] For the circle above, write the center in (h, k) form.

f. [4c.63] For the circle above, find the radius r.

Formulas

Quadratic formula: $x=\frac{-b}{2a}\pm\frac{\sqrt{b^2-4ac}}{2a}$

Vertex form for a parabola: $(y-k)=a(x-h)^2$

Parabola with focus at (h, k+p): $(y-k)=\left(\frac{1}{4p}\right)(x-h)^2$