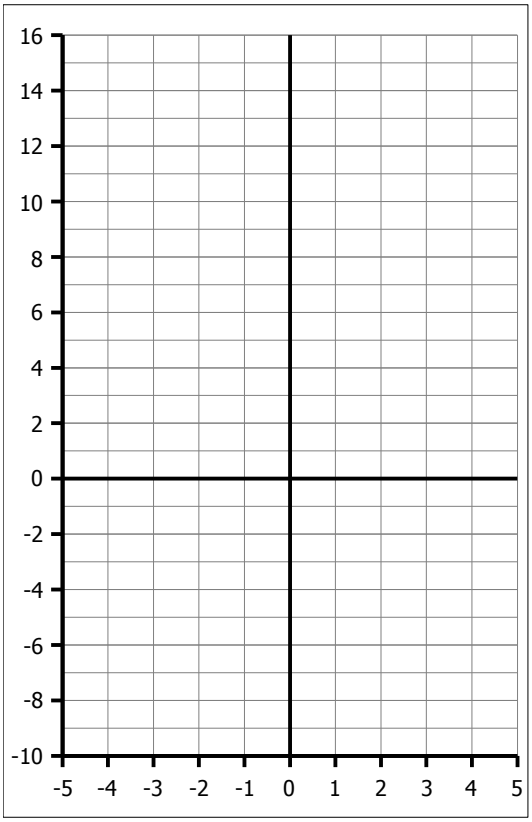
MS 100 College Algebra Test Three (11 students) Name:

file and version info: m62t3.odt 200607171712

1. Find the vertex for the function $f(x)=\frac{-16x^2}{27}+12$ and write the vertex in (h, k) format.

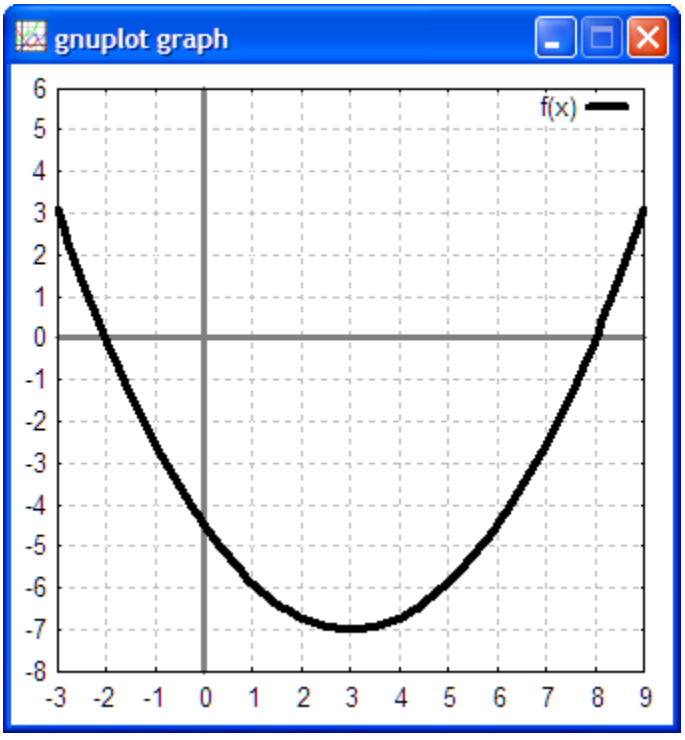


2. Find the zeros for the function $f(x)=\frac{-16x^2}{27}+12$

3. Plot the function $f(x)=\frac{-16x^2}{27}+12$

4. Convert $y = x^2 + 10x + 31$ to the $(y - k) = a(x - h)^2$ standard form for a quadratic function.

5. 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.



6. For a function $(y - k) = a(x - h)^2$ if $a > 0$, $h > 0$, and $k > 0$, then which following statement or statements are true:

True | False There is a single degenerate repeated zero for this function.
True | False There is are two real zeros for this function.
True | False There is are two imaginary zeros for this function.
True | False There are no zeros, neither real nor imaginary, for this function.

7. A water wave in shallow water travels with a velocity v: $v(d)=\sqrt{g\,d}$ where g is the acceleration of gravity and d is the depth of the water. The kinetic energy of a moving object is k(v) = $\frac{1}{2}m\,v^2$ where m is the mass and v is the velocity.

Find $k \circ v(d)$

8. For the following questions use:

$f(x) = 16x^2 + 56x + 49$
$g(x) = 4x + 7$

a. _____ Find $(f + g)(x)$

b. _____ Find $(f \div g)(x)$

c. _____ Find $[g(x)]^2$

d. _____ Find $(f \circ g)(x)$

e. _____ Find $(g \circ f)(x)$

f. _____ Find $(g \circ f)\left(\frac{-7}{4}\right)$

g. Does the function f(x) pass the vertical line test?

h. Does the function f(x) pass the horizontal line test?

i. Does the function g(x) pass the vertical line test?

j. Does the function g(x) pass the horizontal line test?

k. Find the inverse function $g^{-1}(x)$ using $g \circ g^{-1}(x)=x$

l. Toughie: For the $x > 0$ positive branch of f(x), find $f^{-1}(x)$