

Name: \_\_\_\_\_

**M\$5 Exam 5 PRACTICE**

- The graph of the equation  $y = (x + 2)^2$  is  
(1) a straight line                      (3) an ellipse  
(2) a circle                                (4) a parabola
- If the graphs of  $x^2 + y^2 = 16$  and  $y = -3$  were drawn on the same set of axes, the total number of points common to the graphs would be:  
(1) 1                      (2) 2                      (3) 3                      (4) 4
- Given the equation  $0 = ax^2 + bx + c$ , in which  $a$ ,  $b$ , and  $c$  are integers. If the discriminant of this equation is equal to 8, then the roots of the equation must be  
(1) real                      (3) equal  
(2) positive                      (4) rational
- The equation whose graph is an ellipse is  
(1)  $4x^2 + 9y = 18$                       (3)  $3x^2 = 7 - 5y^2$   
(2)  $3x^2 = 7 + 5y^2$                       (4)  $4x + 9y = 36$
- Simplify:  $\sqrt{2}\left(3 + \sqrt{\frac{1}{2}}\right) - \sqrt{18}$
- Write an equation for the axis of symmetry of the graph of  $y = 3x^2 - 12x + 5$ .
- Which of the following is an imaginary number?  
(1)  $\sqrt[3]{-8}$                       (3)  $-\sqrt{16}$   
(2)  $\sqrt[3]{8}$                       (4)  $\sqrt{-16}$
- If  $r$  varies inversely as  $s$ , then their  
(1) difference is constant  
(2) sum is constant  
(3) quotient is constant  
(4) product is constant
- Write the equation of an ellipse with center  $(-4, 2)$  and that is tangent to the  $y$ -axis.
- Write the equation of a hyperbola centered at the origin with  $y$ -intercepts of 4 and  $-4$ .
- When the graphs of the equations  $xy = -16$  and  $y = x$  are drawn on the same set of axes, what is the total number of common points?
- If  $f(x) = \frac{3}{x^2 - 1}$  and  $g(x) = \frac{1}{x + 1}$ , then find each of the following in simplest form.  
a)  $(f \circ g)(x)$   
b)  $(g \circ f)(x)$   
c)  $(g \circ g)(x)$
- Solve and check:  $2\sqrt{2x + 3} + x = 1$
- What is the additive inverse of the complex number  $3 - 2i$ ?

15. The height of a projectile is modeled by the equation  $y = -2x^2 + 38x + 10$ , where  $x$  is time, in seconds, and  $y$  is height, in feet. During what interval of time, to the *nearest tenth of a second*, is the projectile *at least* 125 feet above the ground?

