

# MATH1314 College Algebra

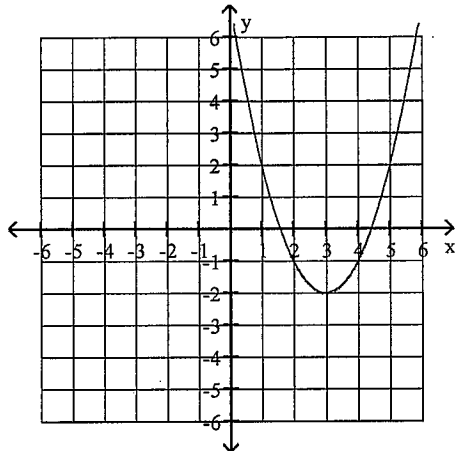
## Review for Exam 2

Solve the absolute value inequality. Write the solution set using interval notation.

1)  $5|x - 9| < 3$

Use the graph of the quadratic function to determine the sign of the leading coefficient, the vertex, and the equation of the axis of symmetry.

2)



Determine the vertex of the graph of  $f$ .

3)  $f(x) = (x - 6)^2 - 4$

Write the equation as  $f(x) = a(x - h)^2 + k$ . Identify the vertex.

4)  $f(x) = x^2 + 5x + 2$

Solve the quadratic equation.

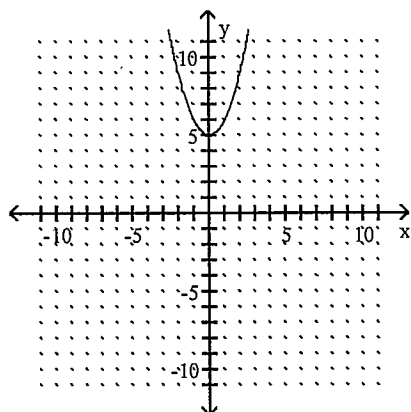
5)  $x^2 - 8x + 15 = 0$

Use the discriminant to determine the number of real solutions.

6)  $4x^2 - 8x + 4 = 0$

The graph of  $f(x) = ax^2 + bx + c$  is given in the figure. Determine whether the discriminant is positive, negative, or zero.

7)



Divide and write the result in standard form.

$$8) \frac{4 + 3i}{5 + 2i}$$

Solve the quadratic equation. Write complex solutions in standard form.

$$9) x^2 + x + 3 = 0$$

Solve the inequality.

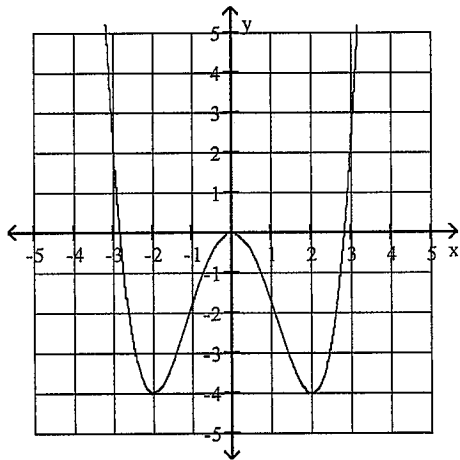
$$10) x^2 - 3x - 4 < 0$$

Find an equation that shifts the graph of  $f$  by the indicated amounts.

$$11) f(x) = x^2 + 2x - 7; \text{ right 6 units, down 13 units}$$

Determine any local or absolute extrema as indicated.

12) Use the graph of  $f$  to estimate the local extrema.



State the end behavior of the graph of  $f$ .

$$13) f(x) = 3x - \frac{1}{6}x^3$$

Evaluate the function  $f$  at the indicated value.

14)

$$f(-9) \text{ for } f(x) = \begin{cases} 4x, & \text{if } x \leq -1 \\ x - 5, & \text{if } x > -1 \end{cases}$$

## Answer Key

Testname: MATH1314\_REVIEW2

1)  $\left(\frac{42}{5}, \frac{48}{5}\right)$

2) Positive; (3, -2);  $x = 3$

3) (6, -4)

4)  $f(x) = \left(x + \frac{5}{2}\right)^2 - \frac{17}{4}; \left(-\frac{5}{2}, -\frac{17}{4}\right)$

5) 3, 5

6) One real solution

7) Negative

8)  $\frac{26}{29} + \frac{7}{29}i$

9)  $-\frac{1}{2} \pm \frac{i\sqrt{11}}{2}$

10)  $-1 < x < 4$

11)  $y = (x - 6)^2 + 2(x - 6) - 20$

12) Local maximum: 0; local minimum: -4

13) Up on left side, down on right side

14) -36