Part A: Review all previous test worksheets.

Part B: Formulas to review, know, and be able to apply:

1. **Pythagorean Theorem:** $a^2 + b^2 = c^2$

2. **Quadratic Formula:** $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

3. **Distance Formula:** $d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$

4. **Slope Formula:** $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

5. **Point-slope form of the equation of a line:** $y - y_1 = m(x - x_1)$

6. **Slope-intercept form of the equation of a line:** $y = mx + b$

7. **Axis of symmetry for parabolas of the form $y = ax^2 + bx + c$, where a, b, and c are real numbers and $a \neq 0$:** $x = \dfrac{-b}{2a}$

Part C: Complete the attached review worksheet.

Evaluate.

   1) $(-2)^0$

   2) $8^0 - 5^0$

   3) $(-11)^0 - 11^0$

Use a combination of rules for exponents to simplify. Write answers with only positive exponents. Assume that all variables represent nonzero real numbers.

   4) $(3r)^7(3r)^{-6}$

   5) $\dfrac{14x^{-3}}{(2x)^2}$

   6) $\left(\dfrac{3p^{-2}q}{2^{-1}m^3}\right)^2$

Factor as completely as possible. If unfactorable, indicate that the polynomial is prime.

   7) $32x^2 - 72$

   8) $x^2 - 2xy - 24y^2$

   9) $12x^3 - 42x^2 - 24x$

   10) $64x^2 + 112xy + 49y^2$

Find all values that make the expression undefined.

   11) $\dfrac{9y - 2}{y^2 - 16}$

   12) $\dfrac{x^2 - 100}{x^2 + 9x + 20}$

Write the expression in lowest terms.

13) $\dfrac{y^2 + 13y + 40}{y^2 + 14y + 48}$

14) $\dfrac{4k - 12}{6 - 2k}$

Perform the indicated operation. Give the answer in lowest terms.

15) $\dfrac{4p - 4}{p} \div \dfrac{7p-7}{9p^2}$

16) $\dfrac{k^2 + 15k + 54}{k^2 + 16k + 63} \cdot \dfrac{k^2 + 7k}{k^2 + 4k - 12}$

Perform the indicated operation and simplify.

17) $-\dfrac{3}{56} - \dfrac{8}{8x}$

18) $\dfrac{9}{z^2} - \dfrac{6}{z}$

19) $\dfrac{7}{x + 6} + \dfrac{3}{x}$

Solve the equation.

20) $\dfrac{4x}{9} + x = 6$

21) $\dfrac{5}{m + 2} - \dfrac{4}{m - 2} = \dfrac{-20}{m^2 - 4}$

Find the x- and y-intercepts. Then graph the equation.

22) $6y - 2x = -4$

Find the slope of the line through the pair of points.

23) $(-7, -8)$ and $(2, -9)$

Graph the line described.

24) Through $(0, 4)$; $m = -\dfrac{1}{5}$

25) Undefined slope; through $(2, 9)$

Find the slope and the y-intercept of the line.

26) $4x - 5y = 5$

Decide whether the pair of lines is parallel, perpendicular, or neither.

27) $3x - 6y = -17$ and $18x + 9y = 2$

28) The line through $(-20, 5)$ and $(-4, 7)$ and the line through $(-5, 5)$ and $(7, 4)$

Write the equation in slope-intercept form.

29) $3x - 10y = -6$

Find an equation of the line passing through the two points. Write the equation in standard form.

30) $(2, -6)$ and $(-9, 6)$

Find an equation of the line that satisfies the conditions. Write the equation in standard form.

31) Through $(4, 4)$; $m = -\dfrac{2}{7}$

32) Through $(0, 2)$; $m = \dfrac{5}{7}$

Find the following.

33) Find $f(-3)$ when $f(x) = x^2 + 5x - 6$

34) Find $f(k - 1)$ when $f(x) = 3x^2 + 4x + 4$

Determine whether the relation is a function.

35) $\{(-9, 3), (-9, 5), (2, -3), (4, 1), (7, 1)\}$

36)

Solve the system of equations.

37) $x - 7y = 7$
     $-4x - 6y = 6$

38) $6x - 5y = 8$
     $4x - 2y = 0$

Find the following.

39) Ellen wishes to mix candy worth
     $1.90 per pound with candy worth
     $3.50 per pound to form 32 pounds
     of a mixture worth $2.80 per pound.
     How many pounds of the more
     expensive candy should she use?

40) How many liters (L) of a 20%
     alcohol solution must be mixed with
     60 L of a 70% solution to get a 50%
     solution?

41) A plane flies 440 miles with the wind
     and 340 miles against the wind in
     the same length of time. If the
     speed of the wind is 30 mph, what
     is the speed of the plane in still air?

Graph the linear inequality in two variables.

42) $y < -2$

43) $x + 3y \geq -1$

Graph the compound inequality. Indicate the solution by shading.

44) $2x - y > 4$ and $x \leq 4$

Simplify the expression involving rational exponents.

45) $32^{4/5}$

46) $(-125)^{2/3}$

47) $\left(\dfrac{49}{81}\right)^{-1/2}$

Use the rules of exponents to simplify the expression. Write the answer with positive exponents. Assume that all variables represent positive real numbers.

48) $\dfrac{x^{3/5}}{x^{6/5} \cdot x^{-5}}$

49) $(32k^5 m^{-10})^{1/5}$

Express the radical in simplified form.

50) $-\sqrt{180}$

Find the distance between the pair of points.

51) $(5, -7)$ and $(7, -3)$

Simplify. Assume that all variables represent positive real numbers.

52) $-8\sqrt{5} + 2\sqrt{125}$

53) $9\sqrt{7} - 4\sqrt{63}$

Rationalize the denominator. Assume that all variables represent positive real numbers and that the denominator is not zero.

54) $\dfrac{\sqrt{5}}{\sqrt{11} + 3}$

Solve the equation.

55) $\sqrt{x + 7} + 5 = x$

56) $\sqrt{p^2 - 3p + 66} = p + 6$

Multiply.

57) $(7 - 6i)(4 - 4i)$

Write the expression in the form a + bi.

58) $\dfrac{4 - 4i}{5 + 3i}$

Solve the following.

59) $(p - 1)^2 = 17$

60) $3n^2 = -12n - 5$

61) $8x^2 + 7x = -2$

Find the vertex of the parabola.

62) $f(x) = x^2 - 4x + 2$

For the quadratic function, tell whether the graph opens upward or downward.

63) $f(x) = \dfrac{1}{8}x^2 - 2$

Choose the equation that matches the graph.

64)
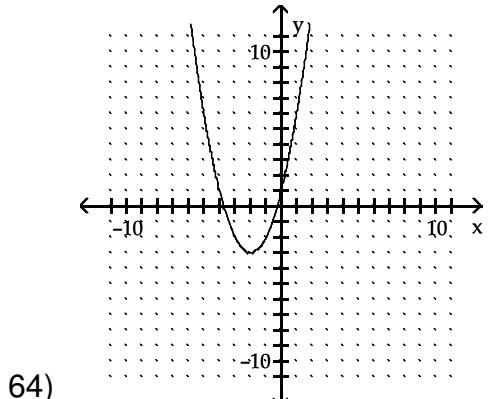
A. $f(x) = x^2 + 4x + 1$ B. $f(x) = x^2 - 4x + 1$
C. $f(x) = x^2 + 4x - 1$ D. $f(x) = x^2 - 4x - 1$

Graph the parabola.

65) $y = x^2 + 2$

66) $f(x) = x^2 + 2x + 2$

1) 1

2) 0

3) 0

4) 3r

5) $\dfrac{7}{2x^5}$

6) $\left(\dfrac{36q^2}{p^4 m^6} \right)$

7) $8(2x - 3)(2x + 3)$

8) $(x - 6y)(x + 4y)$

9) $6x(2x + 1)(x - 4)$

10) $(8x + 7y)^2$

11) 4, -4

12) -5, -4

13) $\dfrac{y + 5}{y + 6}$

14) -2

15) $\dfrac{36p}{7}$

16) $\dfrac{k}{k - 2}$

17) $\dfrac{-3x - 56}{56x}$

18) $\dfrac{9 - 6z}{z^2}$

19) $\dfrac{10x + 18}{x(x + 6)}$

20) $\left\{ \dfrac{54}{13} \right\}$

21) $\varnothing$ or no solution

22) $(2, 0); \left(0, -\dfrac{2}{3} \right)$
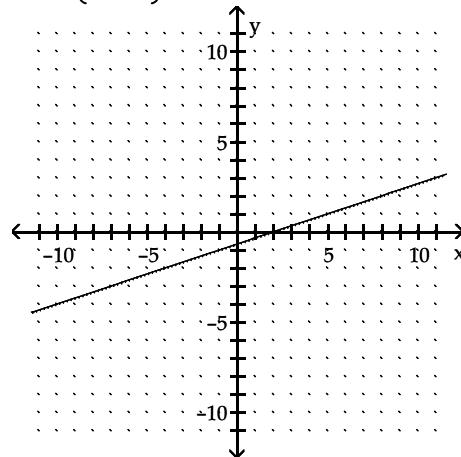
23) $-\dfrac{1}{9}$

24)
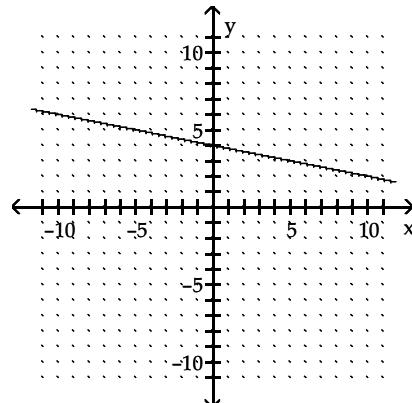
25)
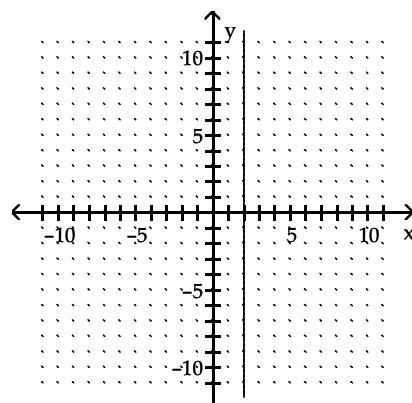
26) Slope $\dfrac{4}{5}$; y-intercept (0, -1)

27) Perpendicular

28) Neither

29) $y = \dfrac{3}{10}x + \dfrac{3}{5}$

30) 12x + 11y = -42

31) 2x + 7y = 36

32) 5x - 7y = -14

33) -12

34) $3k^2 - 2k + 3$

35) Not a function

36) Function

37) {(0, -1)}

38) {(-2, -4)}

39) 18 pounds

40) 40 L

41) 234 mph

42)

43)

44)
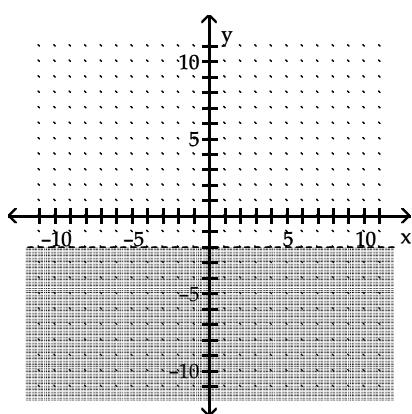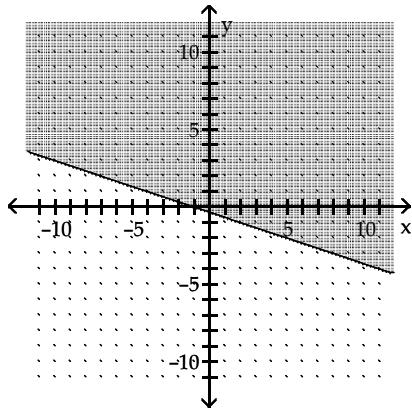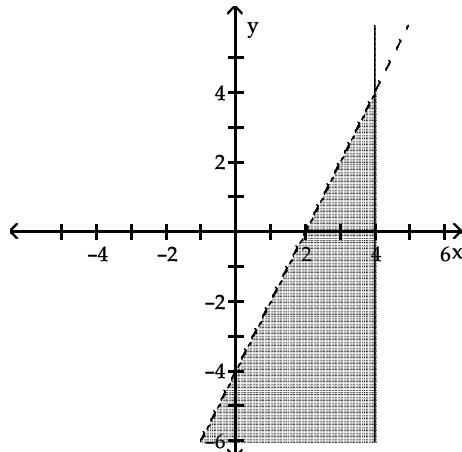
45) 16

46) 25

47) $\dfrac{9}{7}$

48) $x^{22/5}$

49) $\dfrac{2k}{m^2}$

50) $-6\sqrt{5}$

51) $2\sqrt{5}$

52) $2\sqrt{5}$

53) $-3\sqrt{7}$

54) $\dfrac{\sqrt{55} - 3\sqrt{5}}{2}$

55) {9}

56) {2}

57) 4 – 52i

58) $\dfrac{4}{17} - \dfrac{16}{17}i$

59) $\left\{ 1 + \sqrt{17}, 1 - \sqrt{17} \right\}$

60) $\left\{ \dfrac{-6 + \sqrt{21}}{3}, \dfrac{-6 - \sqrt{21}}{3} \right\}$

61) $\left\{ \dfrac{-7 + i\sqrt{15}}{16}, \dfrac{-7 - i\sqrt{15}}{16} \right\}$

62) (2, -2)

63) Upward

64) A

65)

66)