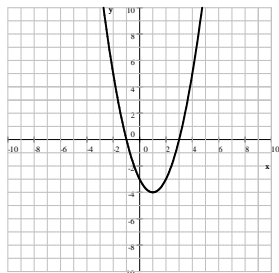


- Graph $f(x) = x^2 - 2x - 3$
- Suppose that $f(x)$ is a function given by $f(x) = -x^2 + 10x - 1$. Find the value of
 - $f(0)$
 - $f(3)$
 - $f(-3)$
 - $\frac{f(-3)}{f(3)}$
 - $f(-1)$
 - $f(5 - \sqrt{2})$
 - Find all values of x with $f(x) = 0$
- Compute the domain of each of the following functions.
 - $f(x) = \frac{x+2}{x^2-9x}$
 - $g(x) = \sqrt{3x+5}$
 - $h(x) = \sqrt{x-10} - \sqrt{4-x}$
- Factor each of the following by completing the square or state if it does not factor.
 - $x^2 - 6x + 5$
 - $x^2 - 6x + 9$
 - $x^2 - 6x + 13$
 - $x^2 - 6x + 7$
 - $1560x^2 - 26598x + 78x^3$
 - $3x^2 - 14x - 5$
- Simplify each of the following expressions.
 - $\frac{(-x^{-4})^{-2}x^3y^0(-yxy^{-2}x^{-2})^{-3}}{2x^2(-2x^{-4}y)^{-3}yx^0}$
 - $\frac{x^2-5x}{x^2-2x-15} \cdot \frac{x^2-9}{x^2-3x}$
 - $\frac{3a^2xy^3-3b^2xy^3+3a^2x^2y^2-3b^2x^2y^2}{6ax^4y-6bx^4y-6ax^2y^3+6bx^2y^3}$
 - $\frac{1}{2-\frac{1}{x-4}}$
 - $\frac{x^2-3x}{x^2+4x-21} \cdot \frac{6x+x^2-7}{x^2-x}$
 - $\frac{2ax-3b-3a+2bx}{a^2-b^2} \div \frac{2x^2-x-3}{3b-3a+ax-bx}$
 - $(7-3\sqrt{2})^2$
 - $(6-5\sqrt{2})(6+5\sqrt{2})$
 - $\frac{2}{\sqrt{29}+5}$
 - $\frac{4x-9}{2\sqrt{x}-3}$
 - $8^{-2/3}$
 - $\frac{m^{1/3}}{m^{1/4}}$
 - $\frac{(x^{2/3})^{3/4}}{x^{3/2}}$
 - $3\sqrt{8}+2\sqrt{18}-\sqrt{50}$
 - $\frac{-6+\sqrt{24}}{10}$
- Find $f(2 - \sqrt{7})$ if $f(x)$ is a function defined by $f(x) = 3x^2 - 12x - 3$.
- Solve each of the following equations. Make sure to check your solutions.
 - $\frac{5x+1}{28} + \frac{12x-6}{56} = \frac{x-1}{14}$
 - $x^3 = 12x^2 + 3213x$
 - $3|x+3| - 5 = 10$
 - $2(x-3) - \frac{x}{2} = \frac{3}{2}(x-4)$
 - $x^3 - 2x^2 - 35x = 0$
 - $2x^2 - 32x = 0$
 - $x^2 + 11 = 8x$
 - $x^2 + 134 = 22x$
 - $4x + x^3 = 6x^2$
 - $3\left|\frac{1}{2}x - 5\right| + 1 = -8$
 - $5 - (2-x)(x+3) = (x-2)^2$
- Solve each of the following inequalities. Graph the solution set.
 - $(2-3x)(x-5) \leq 4 - (x-3)(3x+2)$
 - $\frac{5-4x}{3} - \frac{2x-7}{5} > -2x+2$

9. Find an equation of the line that
- is parallel to $3y - 2x = 9$ and passes through the point $(6, -4)$.
 - is perpendicular to $3y - 2x = 9$ and passes through the point $(6, -4)$.
 - passes through the points $(7, -8)$ and $(2, 2)$
10. Word Problems.
- The difference between two integers is 26. Their product is 1767. Find these numbers.
 - How many gallons of 12% solution must be mixed with 6 gallons of 20% solution to obtain a solution that is 15%?
 - How many gallons of each of a 7% solution and a 27% solution should be mixed if we wanted to obtain 60 gallons of a 10% solution?
 - The population of a town has decreased from 75000 to 65250. What percent of a change does this represent?
 - The sum of five times a number and -10 is 8 less than six times the sum of 7 and the opposite of the number. Find this number.
 - We have invested \$8000 into two bank accounts: one earns 6% interest, the other one earns 9% interest. How much money did we invest into each account if the combined interest was \$660?
 - The hypotenuse of a right triangle is 26 cm. The difference between the other two sides is 14 cm. Find the missing sides.
 - Lisa took 5 exams. The first 4 received scores of 72, 93, 86, and 82. How much did she score on the fifth exam if her average score is 74 points?

Answers

1. $f(x) = x^2 - 2x - 3$



2. a) -1 b) 20 c) -40 d) -2 e) -12 f) 22 g) $5 + 2\sqrt{6}$ and $5 - 2\sqrt{6}$

3. a) $x \neq 0, 9$ b) $x \geq -\frac{5}{3}$ c) $4 \leq x \leq 10$

4. a) $(x-1)(x-5)$ b) $(x-3)^2$ c) does not factor over the real numbers

d) $(x-3-\sqrt{2})(x-3+\sqrt{2})$ e) $2x(x-11)(x+31)$ f) $(3x+1)(x-5)$

5. a) $4y^5$ b) 1 c) $\frac{y(a+b)}{2x(x-y)}$ d) $\frac{x-4}{2x-9}$ e) 1 f) $\frac{x-3}{x+1}$ g) $67 - 42\sqrt{2}$

h) -14 i) $\frac{\sqrt{29}-5}{2}$ j) $2\sqrt{x}+3$ k) $7\sqrt{2}$ l) $\frac{\sqrt{6}-3}{5}$ m) $\frac{1}{4}$ n) $m^{1/12}$ o) $\frac{1}{x}$

6. 6

7. a) 0 b) $63, 0, -51$ c) $-8, 2$ d) identity e) $7, 0, -5$ f) $0, 16$ g) $4 + \sqrt{5}, 4 - \sqrt{5}$

h) no real solution i) $0, 3 - \sqrt{5}, 3 + \sqrt{5}$ j) no solution k) 1

8. a) $x \leq 2$ b) $x > -4$

9. a) $\frac{2}{3}(x-6) = y+4$ or $y = \frac{2}{3}x - 8$ b) $-\frac{3}{2}(x-6) = y+4$ or $y = -\frac{3}{2}x + 5$

c) $y = -2x + 6$

10. a) $-57, -31$ and $31, 57$ b) 10 gallons c) 42 gallons of 7% and 18 gallons of 27%

d) 13% decrease e) 4 f) \$2000 at 6% and \$6000 at 9% g) 10 cm and 24 cm h) 37