

College Algebra

1. Solve $\frac{5x - 4}{3x - 2} < \frac{7}{4}$

[Solution 1](#) [Solution 2](#)

2. Simplify each of the given expressions.

a) $\frac{2^{x+1} \cdot 5^{x-2}}{10^{x-2}}$ [Solution](#)

3. Find an equation for the tangent line drawn to the circle $(x - 4)^2 + (y - 9)^2 = 40$ to the point $P(10, 11)$. [Solution](#)

4. Find the domain of each of the given functions.

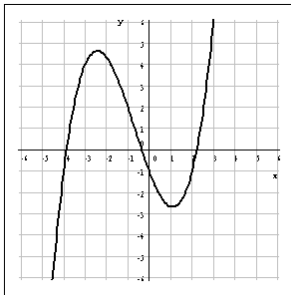
a) $f(x) = \frac{1}{x^2 - 2x - 35}$

b) $f(x) = \sqrt{x^2 - 2x - 35}$

c) $f(x) = \ln(x^2 - 2x - 35)$ [Solution](#)

5. Find an equation for the set of all points that are twice as far from $A(-3, -1)$ than from $B(9, 5)$. [Solution](#)

6. Given the graph of $y = f(x)$. Graph $g(x) = |f(x)|$ in the same coordinate system. [Solution](#)



Graphing Factored Polynomials

[Part 1A](#), [Part 1B](#), [Part 1C](#)

[Graphing Factored Polynomials - Part 2](#)

Logarithms 2

[Part 0 - the Ingredients](#) [Part 3 - Rules 5 and 6](#)

[Part 1 - Rule 3](#) [Part 4 - Final Thoughts](#)

[Part 2 - Rule 4](#)

7. Suppose that $A = \log_3 2$. Express each of the following in terms of A .

a) $\log_3 18$

c) $\log_3 \left(\frac{27}{4}\right)$ e) $\log_{18} 24$

b) $\log_3 24$

d) $\log_2 3$

[Solution](#)

[Why \$i^2\$ is \$-1\$?](#)

[Summation Notation](#)

8. Compute each of the given sums. (Note: the solution uses $1 + 2 + \dots + n = \frac{n(n+1)}{2}$ after induction, and there is no mentioning of arithmetic sequences.)

a) $\sum_{k=1}^{50} (8k - 3)$ c) $\sum_{k=20}^{50} (8k - 3)$

b) $\sum_{k=0}^{50} (8k - 3)$ [Solution](#)

9. Compute the given sums.

a) $3^2 + 6^2 + 9^2 + \dots + 120^2$ [Solution](#)

b) $0.8^2 + 1.6^2 + 2.4^2 + \dots + 120^2$ [Solution](#)

c) $150^2 + 151^2 + \dots + 200^2$ [Solution](#)

d) $1^2 + 3^2 + 5^2 + \dots + 201^2$ [Solution](#)

e) $\sum_{k=5}^{200} (k^2 - 2k + 1)$ [Solution](#)

10. Find the slope of the tangent line drawn to the graph of $y = -\frac{1}{2}x^2 + 3x + 1$ from the point $P(4, 7)$. [Solution](#)

11. Find all values of p so that $y = 4x + 2$ is tangent to $y = px^2 + 8$. [Solution](#)

[Solving Quadratic Inequalities](#)

[How to take the Absolute Value of a Graph](#)

[Discontinuities of Rational Functions](#) [Hole or vertical asymptote?](#)

[The Binomial Theorem](#)

[Why \$0!=1\$](#)

[Pascal's Triangle](#)