

Practice Test 1

Name _____

NOTE: You must show enough of your work so that the grader can follow what you did. If it is possible to find an exact answer by taking an algebraic approach, you will not receive full credit for an approximation or a calculator-generated answer.

1. Perform the indicated operations and simplify completely:

a) $(3x - 2)(x + 5) - (2x + 5)^2$

b) $5k - [k + (-3 + 5k)]$

c) $\left(\frac{(5v^4)^2}{(2v)^2}\right)^{-1/2}$

d) $-16^{3/2}$

2. Beauty Works sells its cologne wholesale for \$9.75 per bottle and can produce a maximum of 150,000. The variable costs of producing x thousand bottles is $-3x^2 + 3480x - 325$ dollars, and the fixed costs of manufacturing are \$260,000. Find expressions for the revenue, cost, and profit selling x thousand items. (Make sure to simplify! You should have three answers.)

3. A self-help guru sells her book *Be Happy in 45 Easy steps* for \$23.50 per copy. Her fixed costs are \$145,000 and the estimate of the variable cost of printing, binding, and distributing x thousand books is given by $-4.2x^2 + 3220x - 425$ dollars. Find expressions for the revenue, cost, and profit from selling x thousand copies of the book. (Make sure to simplify! You should have three answers.)

4. Factor completely:

a) $z^2 + 10z + 24$

b) $8x^2 - 14x + 3$

5. Simplify the rational expressions completely:

a) $\frac{m^2 - 4m + 4}{m^2 + m - 6}$

b) $\frac{8}{y+2} - \frac{3}{y}$

6. Solve the rational equations:

a) $-\frac{3k}{2} + \frac{9k-5}{6} = \frac{11k+8}{k}$

b) $\frac{4}{x-3} - \frac{8}{2x+5} = -\frac{3}{x-3}$

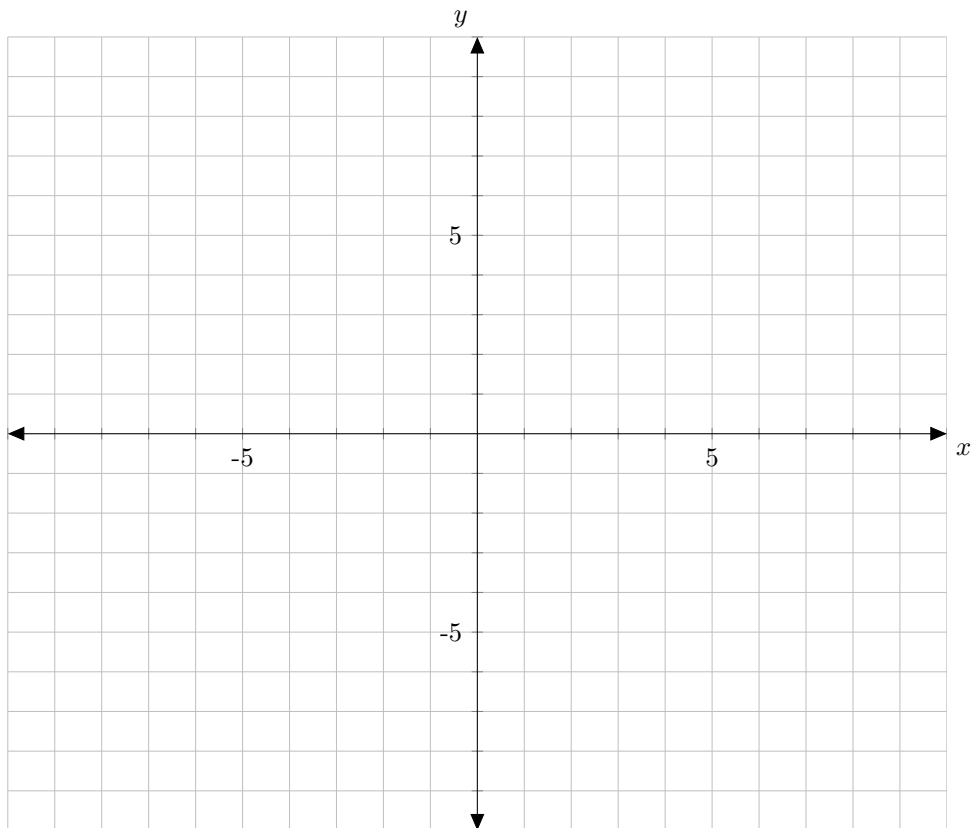
c) $2m^2 + 20 = 13m$

d) $2x^2 + 7x + 1 = 0$

7. Joan wants to buy a rug for a room that is 12 feet by 15 feet. She wants to leave a uniform strip of floor around the rug. She can afford a 108 square foot of rug. What dimensions should the rug have?

8. Find the x -intercept(s), y -intercept(s) and slope and sketch a graph for $4x - 3y = 12$.

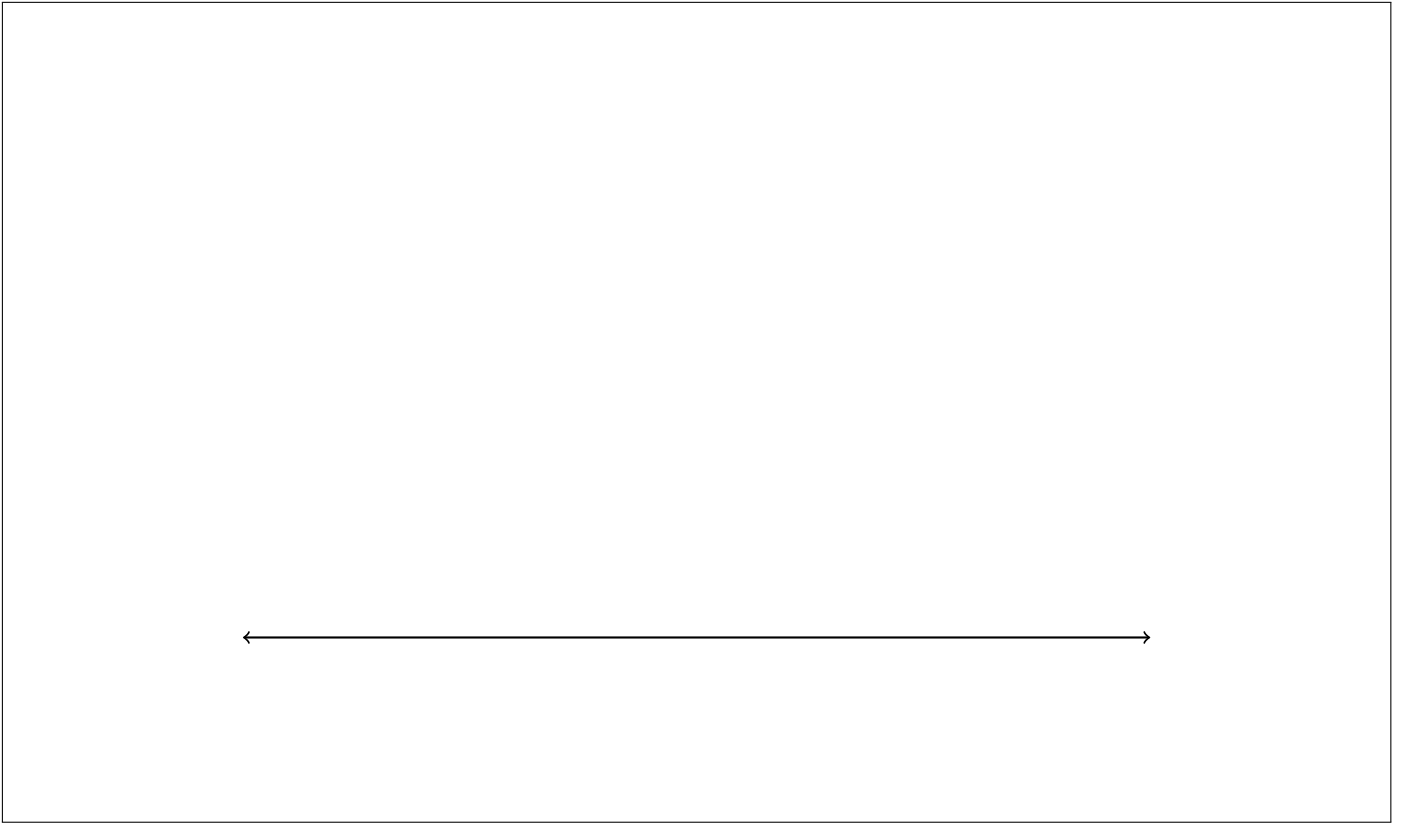
x -intercept(s): _____ y -intercept(s): _____ slope: _____



9. Solve the inequality:

$$-5 < \frac{3k - 1}{2} \leq 4$$

Express your answer in interval notation and graph the solution.



10. Solve the inequality:

$$(x^2 - 5x)(x + 2) > 0$$

Express your answer in interval notation and graph the solution.

