

Review Problems

Quiz 1 will cover the following topics: linear equations (handout), systems of linear equations (handout), rules of exponents (handout), operations on polynomials, and graphing straight lines (handout). ALL of these topics are review from Algebra 1 (Math 98).

1. Simplify each of the following expressions.

a) $x^3 \cdot x^5$ b) $(x^3)^5$ c) $\frac{(x^3)^6}{x^2}$ d) $\frac{(2x^4)^3}{2x^3 \cdot x}$ e) $\frac{(-2x)^2 x^3}{(-2x)^5}$ f) $\left(-\frac{2a}{3b^2}\right)^2 \left(\frac{3ab^2}{-a^2b}\right)^3$

2. Simplify each of the following expressions.

a) $3(2x - 5) - 4x - 3$ d) $(5m^3 - 2)(5m^3 + 2)$ g) $2x - 5 - (x - 1)^2$
b) $3(2x - 5) - 4(x - 3)$ e) $(5m^3 - 2)^2$ h) $\frac{1}{a} - \frac{a}{b}$
c) $(2a - 7)(3a + 1)$ f) $(3q - 2)^2 - 2(q - 1)^2$ i) $3(a - 2)^2 - (2a - 1)(a + 3)$

3. Solve each of the following equations. Make sure to check your solution(s).

a) $2(a - 5) - 3(a + 2) = 5(a + 3) - 7$ d) $\frac{3x + 1}{5} - \frac{2x - 1}{3} = 2x - 16$
b) $2x - 3 = 5x + 1$ e) $2(x - 3)^2 = (x - 2)^2 + x(x - 8)$
c) $(3y - 1)^2 - (y - 2)^2 = 2(2y - 1)^2 + 1$ f) $0.3x - 0.4(x + 0.5) = -0.3x - 0.2$

4. Graph each of the following.

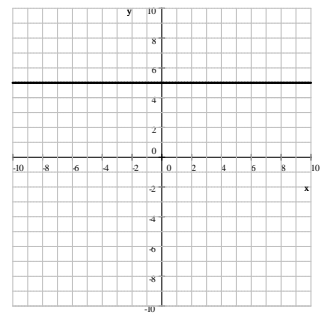
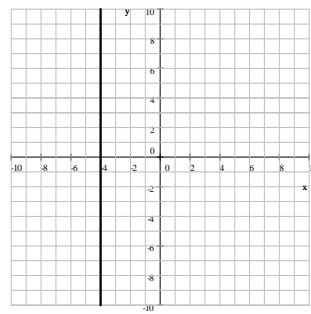
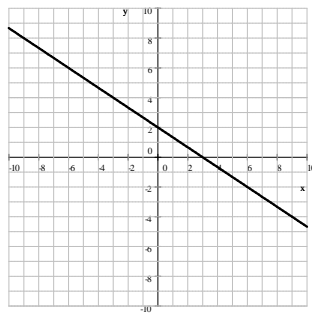
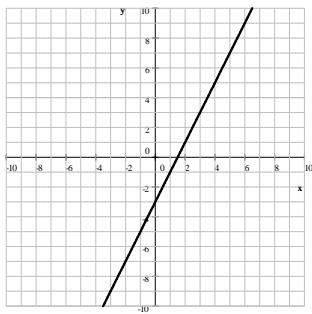
a) $y = 2x - 3$ b) $2x + 3y = 6$ c) $x = -4$ d) $y = 5$

5. Solve each of the following systems of linear equations.

a) $\begin{cases} x + 3y = -7 \\ 2x - 3y = 22 \end{cases}$ b) $\begin{cases} a - 4b = -22 \\ a + b = 3 \end{cases}$ c) $\begin{cases} 2x + 5y = 20 \\ y = -\frac{2}{5}x + 4 \end{cases}$ d) $\begin{cases} 2(p - 3) - (q - 1) = 4 \\ 4(p - q) - (3 - 2q) = -5 \end{cases}$

Review Problems - Answers

1. a) x^8 b) x^{15} c) x^{16} d) $4x^8$ e) $-\frac{1}{8}$ f) $-\frac{12}{ab}$
2. a) $2x - 18$ b) $2x - 3$ c) $6a^2 - 19a - 7$ d) $25m^6 - 4$ e) $25m^6 - 20m^3 + 4$
- f) $7q^2 - 8q + 2$ g) $-x^2 + 4x - 6$ h) $\frac{b - a^2}{ab}$ i) $a^2 - 17a + 15$
3. a) -4 b) $-\frac{4}{3}$ c) 1 d) 8 e) There is no solution. f) 0
4. a) $y = 2x - 3$ b) $2x + 3y = 6$ c) $x = -4$ d) $y = 5$



5. a) $x = 5$ $y = -4$ b) $a = -2$ $b = 5$
- c) This is a dependent system. There are infinitely many solutions: x can be any real number, and then $y = -\frac{2}{5}x + 4$.
- d) There is no solution.