

Review for Math 111

Here are some review problems. If you are thinking about taking Math 111, work through all of these problems to practice skills you will need in Math 111.

1. Compute:

(a) $\frac{6}{5} + \frac{2}{3}$ (b) $\frac{14}{3} - \frac{10}{7}$ (c) $\frac{7}{5} \cdot \frac{4}{5}$ (d) $\frac{4}{5} \div \frac{3}{10}$
(e) $\frac{11}{2} + (-\frac{4}{5})$ (f) $-\frac{3}{2}(-\frac{4}{3})(-\frac{5}{3})(-\frac{6}{5})$ (g) $\frac{-700}{25}$ (h) $\frac{2}{7} \div (-\frac{14}{3})$

2. Solve for x .

(a) $9x - 4 = 8$
(b) $5 - x > 3x + 6$
(c) $-4x + 2 + 5x = 3x - 15$
(d) $3(x - 1) - 1 = 2 - 5(x + 5)$
(e) $1.9x - 7.8 + 5.3x = 3.0 + 1.8x$
(f) $5 - 12x + 9(3x - 4) = 10x$
(g) $7(3x + 6) = 11 - (x + 2)$

3. Find the equation of the line through the two points.

(a) (1, 4) and (3, -2) (b) (3, -6) and (0, 4) (c) (1, 4) and (5, 6)

4. Find the intersection of the two lines.

(a) $y - x = 1$ and $y + x = 3$
(b) $y + x = 1$ and $y - x = 5$
(c) $2x + y = 6$ and $3x + 4y = 4$
(d) $8x - 3y = -31$ and $2x + 6y = 26$
(e) $4x + 3y = -6$ and $-4x + 2y = 16$
(f) $9x - 2y = -4$ and $3x + 4y = 1$

5. Combine like terms:

(a) $(3x^2y - xy^2 + 6xy - 9) + (-4x^2y + xy^2 - 8xy + 11)$
(b) $(-6pq^2 - 3p^2q + 9pq + 4) - (-10pq^2 + 5pq - 6p + 11q)$

6. Multiply and combine like terms:

(a) $(3x - 2y)^2$ (b) $(4a - 5b)(3a + 7b)$

7. Find the value of q for which $A = B$.

(a) $A = -q^2 + 14q$, $B = 35 + 2q$ (b) $A = -q^2 + 20q$, $B = 60 + 4q$
(c) $A = -q^2 + 25q$, $B = 8q + 72$

8. Find the vertex of each of the following parabolas.

(a) $y = x^2 - 4x + 9$ (b) $y = -3x^2 + 6x + 10$

9. Rewrite each of the following equations in the form $ax^2 + bx + c = 0$ with $a > 0$. Then give the values of a , b , and c . Do not solve the equation.

(a) $7x - x^2 = 3$ (b) $(x + 1)(x + 3) = 10$ (c) $x^2 - 16 = 3x$

10. Solve the given equation for the indicated variable.

(a) $A = prs + pr^2$ for s

(c) $\frac{1}{R} = \frac{1}{r_1} + \frac{1}{r_2}$ for r_2

(e) $S = \frac{H}{m(v_1 - v_2)}$ for v_1

(g) $T = 2p\sqrt{\frac{L}{g}}$ for g

(i) $A = 1 - \sqrt[4]{\frac{a}{b}}$ for a

(b) $\frac{1}{R^2} = \frac{1}{r_1} + \frac{1}{r_2}$ for R

(d) $C = \frac{5}{9}(F - 32)$ for F

(f) $T = 2p\sqrt{\frac{L}{g}}$ for L

(h) $P = \sqrt[3]{\frac{m-1}{m}}$ for m

(j) $A = 1 - \sqrt[4]{\frac{a}{b}}$ for b

11. Find the average (mean) of each group of numbers.

(a) 0, 5, and 7

(b) x , $3x$, $7x$, $10x$, and $3x$

(c) $s + 2$, $2s + 4$, and $3s + 9$

Answers

1. (a) $\frac{28}{15}$ (b) $\frac{68}{21}$ (c) $\frac{28}{25}$ (d) $\frac{8}{3}$ (e) $\frac{47}{10}$ (f) 4 (g) -28 (h) $-\frac{3}{49}$
2. (a) $x = \frac{4}{3}$ (b) $x < -\frac{1}{4}$ (c) $x = \frac{17}{2}$ (d) $x = -\frac{19}{8}$ (e) $x = 2$ (f) $x = \frac{31}{5}$ (g) $x = -\frac{3}{2}$
3. (a) $y = -3x + 7$ (b) $y = -\frac{10}{3}x + 4$ (c) $y = \frac{1}{2}x + \frac{7}{2}$
4. (a) (1, 2) (b) (-2, 3) (c) (4, -2) (d) (-2, 5) (e) (-3, 2) (f) $(-\frac{1}{3}, \frac{1}{2})$
5. (a) $-x^2y - 2xy + 2$ (b) $4pq^2 - 3p^2q + 4pq + 6p - 11q + 4$
6. (a) $9x^2 - 12xy + 4y^2$ (b) $12a^2 + 13ab - 35b^2$
7. (a) $q = 5$ and $q = 7$ (b) $q = 6$ and $q = 10$ (c) $q = 8$ and $q = 9$
8. (a) (2, 5) (b) (1, 13)
9. (a) $x^2 - 7x + 3 = 0$ $a = 1, b = -7, c = 3$
(b) $x^2 + 4x - 7 = 0$ $a = 1, b = 4, c = -7$
(c) $x^2 - 3x - 16 = 0$ $a = 1, b = -3, c = -16$
10. (a) $s = \frac{A - pr^2}{pr}$
(b) $R = \sqrt{\frac{r_1 r_2}{r_1 + r_2}}$
(c) $r_2 = \frac{Rr_1}{r_1 - R}$
(d) $F = \frac{9}{5}C + 32$
(e) $v_1 = \frac{H}{Sm} + v_2$
(f) $L = \frac{gT^2}{4p^2}$
(g) $g = \frac{4Lp^2}{T^2}$
(h) $m = \frac{1}{1 - P^3}$
(i) $a = b(1 - A)^4$
(j) $b = \frac{a}{(1 - A)^4}$
11. (a) 4 (b) $\frac{24x}{5}$ (c) $2s + 5$