

Prior knowledge of mathematics: Short answers

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Short answers to the test problems

Terms

1.
 - a) 14
 - b) $\frac{1}{9}$
 - c) -16
 - d) 4

2.
 - a) $3x + 13y + 3z$
 - b) $18m + 6q$
 - c) $10a - b$
 - d) $60a^5b^3$
 - e) $x^4 - y^4$

3.
 - a) $p^2 + 2pq + q^2$
 - b) $4x^2 + 12xy + 9y^2$
 - c) $x^2 - 2xy + y^2$
 - d) $4a^2 - 12a^2x + 9a^2x^2$
 - e) $a^2 - 4$
 - f) $25x^2y^2 - 9x^2z^2$

4.
 - a) $5a^2(1 - 2a - 5a^2)$
 - b) $3a(x - a)(x + 3a)$

5.
 - a) $\frac{7}{9b}$
 - b) $\frac{1}{abc}$
 - c) $\frac{2b}{a - b}$
 - d) $\frac{p}{p - 1}$
 - e) - 1

6. a) $\frac{20b^2y}{10a^2b^2x}$
b) $\frac{25ab^2}{10a^2b^2x}$
7. a) $\frac{3x}{5}$
b) $\frac{5x - 8y}{a}$
c) $\frac{5x}{6}$
d) $\frac{a^2 - c}{ab}$
e) $\frac{a^2 + ab - b}{a^2 - b^2}$
f) $\frac{t + 6}{3t}$
8. a) $\frac{5}{2}$
b) $\frac{1}{6ab}$
c) $-\frac{2d}{3}$
d) $6q$
e) $4b + 3q$
f) $6a^2b^2c$
g) $x + 2$
h) $\frac{x}{c}$
i) $\frac{1}{ab}$
j) xy
k) r
9. a) $a^{24}b$
b) $a^{-10}b^{10}$
10. a) The expression is defined for all real numbers x .
b) $x = -2$
c) $x < -3$
d) $-2 \leq x \leq 2$

Equations

11. a) $x = \frac{11}{2}$
 b) $x = \frac{c-2a}{1+c}$
 c) $x = 9$
 d) The equation has no solution.

Functions

12. a) $f(0) = -4$
 $f(-4) = -16$
 b) $x = \frac{4}{3}$

13. a) $f(-1) = -2$
 b) $f(2) \approx 2.8$
 c) $x_1 = -3$
 $x_2 = 1$
 d) $x_1 \approx -2.5$
 $x_2 \approx 0.3$

14. a) $y = f(x) = -\frac{9}{4}x + \frac{1}{2}$
 b) $S_y\left(0 \middle| \frac{1}{2}\right)$
 c) $S_x\left(\frac{2}{9} \middle| 0\right)$